DVP-NC60P
RMT-D176A

SERVICE MANUAL

Canadian Model
US Model

Photo : DVP-NC60P
RMT-D176A

ENERGY STAR Notes: US and Canada model only

SPECIFICATIONS

System
Laser: Semiconductor laser
Signal format system: NTSC

Audio characteristics
Frequency response: DVD VIDEO
(PCM 96 kHz): 2 Hz to 44 kHz
(44 kHz: −2 dB ±1 dB)/
CD: 2 Hz to 20 kHz (±0.5 dB)
Signal-to-noise ratio (S/N ratio): 115 dB
(LINE OUT L/R (AUDIO) jacks only)
Harmonic distortion: 0.003%
Dynamic range: DVD VIDEO: 103 dB/
CD: 99 dB
Wow and flutter: Less than detected value
(±0.001% W PEAK)

Outputs
(Jack name: Jack type/Output level/
Load impedance)
LINE OUT (AUDIO): Phono jack/
2 Vrms/ 10 kilohms
DIGITAL OUT (OPTICAL):
Optical output jack/−18 dBm
(wave length 660 nm)
DIGITAL OUT (COAXIAL): Phono jack/
0.5 Vp-p/75 ohms
COMPONENT VIDEO OUT
(Y, PB, PR): Phono jack/
Y: 1.0 Vp-p/PB, PR:
interlace*1 = 0.648 Vp-p, progressive or
interlace*2 = 0.7 Vp-p/75 ohms
*1   BLACK LEVEL
(COMPONENT OUT) is ON
*2   BLACK LEVEL
(COMPONENT OUT) is OFF
LINE OUT (VIDEO): Phono jack/
1.0 Vp-p 75 ohms
S VIDEO OUT: 4-pin mini DIN/Y:
1.0 Vp-p, C: 0.286 Vp-p/75 ohms

General
Power requirements:
120 V AC, 60 Hz
Power consumption: 12 W
Dimensions (approx.):
430 × 83 × 410 mm
(16 15/16 × 3 17/64 × 16 9/64 in.)
(width/height/depth) incl. projecting
parts
Mass (approx.): 4.4 kg (9 58/64 lb)
Operating temperature: 5°C to 35°C
(41°F to 95°F)
Operating humidity: 25% to 80%

Supplied accessories
See page 16

Specifications and design are subject to
change without notice.

ENERGY STAR® is a U.S. registered mark.
As an ENERGY STAR® Partner, Sony
Corporation has determined that this
product meets the ENERGY STAR®
guidelines for energy efficiency.

CD/DVD PLAYER

SONY®

SAFETY CHECK-OUT

After correcting the original service problem, perform the following
safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.

2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.

3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.

4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.

5. Check the line cord for cracks and abrasion.
Recommend the replacement of any such line cord to the customer.

6. Check the B+ voltage to see it is at the values specified.

7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.
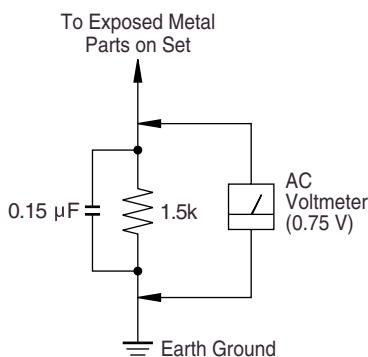

Fig.A. Using an Acvoltmeter to check AC leakage.

WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 25 cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

CAUTION:
The use of optical instrument with this product will increase eye hazard.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

LEAKAGE TEST
The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.

2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.

3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC volmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

Unleaded solder
Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

⚡ : LEAD FREE MARK
Unleaded solder has the following characteristics.
- Unleaded solder melts at a temperature about 40°C highter than ordinary solder.
Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
Soldering irons using a temperature regulator should be set to about 350°C
Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

CLASS 1 LASER PRODUCT
LASER KLASSE 1
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT
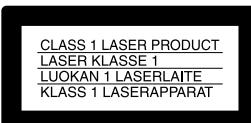
ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!
LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

TABLE OF CONTENTS

DVP-NC60P

7. ELECTRICAL ADJUSTMENT

8. REPAIR PARTS LIST

SECTION 1
GENERAL

This section is extracted from instruction manual. 2-585-637-11

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.
To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

The AC power cord must be changed only at a qualified service shop.

CAUTION

The use of optical instruments with this product will increase eye hazard. As the laser beam used in this CD/DVD player is harmful to eyes, do not attempt to disassemble the cabinet.
Refer servicing to qualified personnel only.

This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

CAUTION

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Notes About the Discs

Note

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
– Reorient or relocate the receiving antenna.
– Increase the separation between the equipment and receiver.
– Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
– Consult the dealer or an experienced radio/TV technician for help.

- To keep the disc clean, handle the disc by its edge. Do not touch the surface.

- Do not expose the disc to direct sunlight or heat sources such as hot air ducts, or leave it in a car parked in direct sunlight as the temperature may rise considerably inside the car.
- After playing, store the disc in its case.
- Clean the disc with a cleaning cloth.
  Wipe the disc from the center out.

- Do not use solvents such as benzine, thinner, commercially available cleaners, or anti-static spray intended for vinyl LPs.
- If you have printed the disc's label, dry the label before playing.

Important Safeguards

For your protection, please read these safety instructions completely before operating the appliance, and keep this manual for future reference.
Carefully observe all warnings, precautions and instructions on the appliance, or the one described in the operating instructions and adhere to them.

Use

Power sources
This set should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of electrical power supplied to your home, consult your dealer or local power company. For those sets designed to operate from battery power, or other sources, refer to the operating instructions.

Grounding or Polarization
This set is equipped with a polarized ac power cord plug (a plug having one blade wider than the other), or with a three-wire grounding type plug (a plug having a third pin for grounding). Follow the instructions below:

For the set with a polarized AC power cord plug:
This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to have a suitable outlet installed. Do not defeat the safety purpose of the polarized plug by forcing it in.

For the set with a three-wire grounding type AC plug:
This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to have a suitable outlet installed. Do not defeat the safety purpose of the grounding plug.

Overloading
Do not overload wall outlets, extension cords or convenience receptacles beyond their capacity, since this can result in fire or electric shock.

Object and Liquid Entry
Never push objects of any kind into the set through openings as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the set.

Attachments
Do not use attachments not recommended by the manufacturer, as they may cause hazards.

Cleaning
Unplug the set from the wall outlet before cleaning or polishing it. Do not use liquid cleaners or aerosol cleaners. Use a cloth lightly dampened with water for cleaning the exterior of the set.

Installation

Water and Moisture
Do not use power-line operated sets near water - for example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, etc.

Power-Cord Protection
Route the power cord so that it is not likely to be walked on or pinched by items placed upon or against them, paying particular attention to the plugs, receptacles, and the point where the cord exits from the appliance.

Accessories
Do not place the set on an unstable cart, stand, tripod, bracket, or table. The set may fall, causing serious injury to a child or an adult, and serious damage to the set. Use only a cart stand tripod, bracket, or table recommended by the manufacturer.

An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

Ventilation
The slots and openings in the cabinet are provided for necessary ventilation. To ensure reliable operation of the set, and to protect it from overheating, these slots and openings must never be blocked or covered.

- Never cover the slots and openings with a cloth or other materials.

- Never block the slots and openings by placing the set on a bed, sofa, rug or other similar surface.

2

- Never place the set in a confined space, such as a bookcase, or built-in cabinet, unless proper ventilation is provided.
- Do not place the set near or over a radiator or heat register, or where it is exposed to direct sunlight.

Antennas

Outdoor antenna grounding
If an outdoor antenna or cable system is installed, follow the precautions below.

An outdoor antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can come in contact with such power lines or circuits.
WHEN INSTALLING AN OUTDOOR ANTENNA SYSTEM, EXTREME CARE SHOULD BE TAKEN TO KEEP FROM CONTACTING SUCH POWER LINES OR CIRCUITS AS CONTACT WITH THEM IS ALMOST INVARIABLY FATAL.
Be sure the antenna system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

Antenna Grounding According to the National Electrical Code

Antenna Lead in Wire
Ground Clamp
Antenna Discharge unit (NEC Section 810-20)
Electric Service Equipment
Grounding Conductors (NEC Section 810-21)
Ground Clamps
Power Service Grounding Electrode System (NEC Art 250 Part H)

NEC-NATIONAL ELECTRICAL CODE

Lightning
For added protection for this set during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the set due to lightning and power-line surges.

Service

Damage Requiring Service
Unplug the set from the wall outlet and refer servicing to qualified service personnel under the following conditions:
- When the power cord or plug is damaged or frayed.

- If liquid has been spilled or objects have fallen into the set.

- If the set has been exposed to rain or water.

- If the set has been subject to excessive shock by being dropped, or the cabinet has been damaged.

- If the set does not operate normally when following the operating instructions. Adjust only those controls that are specified in the operating instructions. Improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the set to normal operation.
- When the set exhibits a distinct change in performance - this indicates a need for service.

Servicing
Do not attempt to service the set yourself as opening or removing covers may expose you to dangerous voltage or other hazards.
Refer all servicing to qualified service personnel.

Replacement parts
When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer that have the same characteristics as the original parts.
Unauthorized substitutions may result in fire, electric shock, or other hazards.

Safety Check
Upon completion of any service or repairs to the set, ask the service technician to perform routine safety checks (as specified by the manufacturer) to determine that the set is in safe operating condition.

Precautions

On safety
- To prevent fire or shock hazard, do not place objects filled with liquids, such as vases, on the apparatus.
- Should any solid object or liquid fall into the cabinet, unplug the player and have it checked by qualified personnel before operating it any further.

On power sources
- The player is not disconnected from the AC power source as long as it is connected to the wall outlet, even if the player itself has been turned off.
- If you are not going to use the player for a long time, be sure to disconnect the player from the wall outlet. To disconnect the AC power cord, grasp the plug itself; never pull the cord.

On placement
- Place the player in a location with adequate ventilation to prevent heat build-up in the player.
- Do not place the player on a soft surface such as a rug.
- Do not place the player in a location near heat sources, or in a place subject to direct sunlight, excessive dust, or mechanical shock.
- Do not install the player in an inclined position. It is designed to be operated in a horizontal position only.
- Keep the player and the discs away from equipment with strong magnets, such as microwave ovens, or large loudspeakers.
- Do not place heavy objects on the player.

On operation
- If the player is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lenses inside the player. Should this occur, the player may not operate properly. In this case, remove the disc and leave the player turned on for about half an hour until the moisture evaporates.
- When you move the player, take out any discs. If you don't, the disc may be damaged.

On adjusting volume
Do not turn up the volume while listening to a section with very low level inputs or no audio signals. If you do, the speakers may be damaged when a peak level section is played.

On cleaning
Clean the cabinet, panel, and controls with a soft cloth slightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzine.

On cleaning discs
Do not use a commercially available cleaning disc. It may cause a malfunction.

IMPORTANT NOTICE
Caution: This player is capable of holding a still video image or on-screen display image on your television screen indefinitely. If you leave the still video image or on-screen display image displayed on your TV for an extended period of time you risk permanent damage to your television screen. Plasma display panel televisions and projection televisions are susceptible to this.

On transporting the player
Before transporting the player, follow the procedure below to return the internal mechanisms to their original positions.

1 Remove all the discs from the disc tray.

2 Press ⏏ to close the disc tray.
Make sure that "NO DISC" appears on the front panel display.

3 Press I/⏻ to turn off the player.
The player enters standby mode.

4 Disconnect the AC power cord.

If you have any questions or problems concerning your player, please consult your nearest Sony dealer.

This Player Can Play the Following Discs

Format of discs	
DVD VIDEO	DVD VIDEO
DVD-RW/-R	DVD RW / DVD R R4.7
DVD+RW/+R	DVD+ReWritable / DVD+R / DVD+R DL
VIDEO CD/ Music CD	COMPACT DISC DIGITAL VIDEO / COMPACT DISC DIGITAL AUDIO
CD-RW/-R	COMPACT DISC ReWritable / COMPACT DISC Recordable

"DVD+RW," "DVD-RW," "DVD+R," "DVD-R," "DVD VIDEO," and "CD" logos are trademarks.

Note about CDs/DVDs

The player can play CD-ROMs/CD-Rs/CD-RWs recorded in the following formats:
– music CD format
– video CD format
– MP3 audio tracks and JPEG image files of format conforming to ISO 9660* Level 1/ Level 2, or its extended format, Joliet
– KODAK Picture CD format
* A logical format of files and folders on CD-ROMs, defined by ISO (International Organization for Standardization).

The player can play DVD-ROMs/ DVD+RWs/DVD-RWs/DVD+Rs/DVD-Rs recorded in the following format:
– MP3 audio tracks and JPEG image files of format conforming to UDF (Universal Disk Format).

Example of discs that the player cannot play

The player cannot play the following discs:
• CD-ROMs/CD-Rs/CD-RWs other than those recorded in the formats listed on this page.
• CD-ROMs recorded in PHOTO CD format.
• Data part of CD-Extras.
• DVD Audios.
• HD layer on Super Audio CDs.

Also, the player cannot play the following discs:
• A DVD VIDEO with a different region code.
• A disc recorded in a color system other than NTSC, such as PAL or SECAM (this player conforms to the NTSC color system).
• A disc that has a non-standard shape (e.g., card, heart).
• A disc with paper or stickers on it.
• A disc that has the adhesive of cellophane tape or a sticker still left on it.

Region code

Your player has a region code printed on the back of the unit and only will play DVD VIDEOs (playback only) labeled with identical region codes. This system is used to protect copyrights.

DVD VIDEOs labeled [ALL] will also play on this player.

If you try to play any other DVD VIDEO, the message "Playback prohibited by area limitations." will appear on the TV screen. Depending on the DVD VIDEO, there may be no region code indication, even though playing the DVD VIDEO is prohibited by area restrictions.

Region code

7

8

About This Manual

• Instructions in this manual describe the controls on the remote. You can also use the controls on the player if they have the same or similar names as those on the remote.
• "DVD" may be used as a general term for DVD VIDEOs, DVD+RWs/DVD+Rs and DVD-RWs/DVD-Rs.
• The meaning of the icons used in this manual is described below:

Icons	Meanings
DVD-V	Functions available for DVD VIDEOs and DVD+RWs/DVD+Rs in +VR mode or DVD-RWs/DVD-Rs in video mode
DVD-RW	Functions available for DVD-RWs in VR (Video Recording) mode
VCD	Functions available for VIDEO CDs (including Super VCDs or CD-Rs/ CD-RWs in video CD format or Super VCD format)
CD	Functions available for music CDs or CD-Rs/CD-RWs in music CD format
DATA CD	Functions available for DATA CDs (CD-ROMs/CD-Rs/CD-RWs) containing MP3* audio tracks, and JPEG image files
DATA DVD	Functions available for DATA DVDs (DVD-ROMs/DVD+RWs/ DVD+Rs/DVD-RWs/DVD-Rs) containing MP3* audio tracks, and JPEG image files.

* MP3 (MPEG-1 Audio Layer III) is a standard format defined by ISO (International Organization for Standardization)/IEC (International Electrotechnical Commission) MPEG which compresses audio data.

Note on playback operations of DVDs and VIDEO CDs

Some playback operations of DVDs and VIDEO CDs may be intentionally set by software producers. Since this player plays DVDs and VIDEO CDs according to the disc contents the software producers designed, some playback features may not be available. Also, refer to the instructions supplied with the DVDs or VIDEO CDs.

Copyrights

Index to Parts and Controls

For more information, see the pages indicated in parentheses.

Front panel
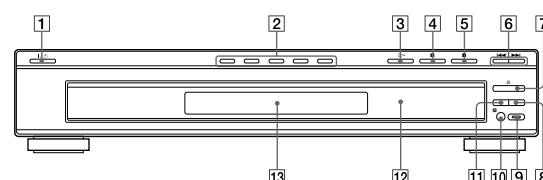
1. I/⏻ (on/standby) button (24)
2. DISC 1 – 5 buttons (25)
3. ▷ (play) button (24)
4. II (pause) button (25)
5. ■ (stop) button (25)
6. I◀◀/▶▶I (previous/next) buttons (35)
7. ⏏ (open/close) button (24)
8. DISC SKIP button (24)
9. PROGRESSIVE button/indicator (19)
   Lights up when the player outputs progressive signals.
10. remote sensor (16)
11. EXCHANGE button (26)
12. Disc tray (24)
13. Front panel display (11)

Rear panel
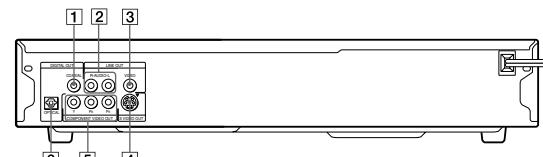
1. DIGITAL OUT (COAXIAL) jack (20)
2. LINE OUT L/R (AUDIO) jacks (20)
3. LINE OUT (VIDEO) jack (17)
4. S VIDEO OUT jack (17)
5. COMPONENT VIDEO OUT (Y, P$_B$, P$_R$) jacks (17)
6. DIGITAL OUT (OPTICAL) jack (20)

9

10

Front panel display

When playing back a DVD VIDEO/DVD-RW

- Disc type
- Disc numbers (25)
- Lights up when you can change the angle (45)
- Playing time of the current title (40)
- Current disc
- All Discs Repeat mode (33)
- Playing status
- Current audio signal (42)
- Lights up during Repeat Play (33)

When playing back a VIDEO CD with Playback Control (PBC) (29)

- Disc type
- Disc numbers (25)
- Current playing time (40)
- Current disc
- Playing status
- Lights up during A-B Repeat Play (34)

When playing back a CD, DATA CD/DATA DVD (MP3 audio), or VIDEO CD (without PBC)

- Disc type
- Disc numbers (25)
- Current track (40)
- Current playing time (40)
- Current disc
- All Discs Repeat mode (33)
- Playing status
- Lights up during Repeat Play (33)
- Lights up when playing MP3 audio tracks (51)

☼ **Hint**
You can adjust the lighting of the front panel display by setting "DIMMER" in "CUSTOM SETUP." (page 64)

Note
The front panel display will turn off automatically when the disc tray is opened.

Guide to the Control Menu Display

Use the Control Menu to select a function and to view related information. Press DISPLAY repeatedly to turn on or change the Control Menu display as follows:

→ Control Menu display 1
↓
Control Menu display 2 (appears for certain discs only)
↓
Control Menu display off

Control Menu display

The Control Menu display 1 and 2 will show different items depending on the disc type. For details about each item, see the pages in parentheses.

Example: Control Menu display 1 when playing a DVD VIDEO.

- Currently playing disc number
- Currently playing title number*[1]
- Currently playing chapter number*[2]
- Total number of titles*[1]
- Total number of chapters*[2]
- Control Menu items
- Selected item
- Function name of selected Control Menu item
- Operation message
- Playback status (► Playback, ‖ Pause, ■ Stop, etc.)
- Type of disc being played*[3]
- Playing time*[4]
- Current setting
- Options

PROGRAM

*[1] Displays the scene number for VIDEO CDs (PBC is on), track number for VIDEO CDs/CDs, album number for DATA CDs/DATA DVDs.
*[2] Displays the index number for VIDEO CDs, MP3 audio track number or JPEG image file number for DATA CDs/DATA DVDs.
*[3] Displays Super VCD as "SVCD."
*[4] Displays the date for JPEG files.

To turn off the display
Press DISPLAY repeatedly.

Remote

9 ‖◄◄ /►►‖ PREV/NEXT (previous/next) buttons (25)
10 ◄‖ ◄◄/►►/►‖ SCAN/SLOW buttons (36)
11 ZOOM button (25, 52)
12 SLOW PLAY/FAST PLAY buttons (25)
13 AUDIO button (42)
14 SUBTITLE button (45)
15 ‖/⏻ (on/standby) button (24)
16 VOL (volume) +/– buttons (59)
The + button has a tactile dot.*
17 TV/VIDEO button (59)
18 PICTURE NAVI (picture navigation) button (38, 52)
19 TIME/TEXT button (39)
20 MENU button (28)
21 ENTER button (22)
22 DISPLAY button (13)
23 ► PLAY button (24)
The ► button has a tactile dot.*
24 ■ STOP button (25)
25 ‖ PAUSE button (25)
26 DISC SKIP button (26)
27 ANGLE button (45)

* Use the tactile dot as a reference when operating the player.

1 TV ‖/⏻ (on/standby) button (59)
2 ⏏ OPEN/CLOSE button (25)
3 Number buttons (28)
The number 5 button has a tactile dot.*
4 CLEAR button (30)
5 TOP MENU button (28)
6 ←/↑/↓/→ buttons (28)
7 ⟲ RETURN button (26)
8 ←•◄‖/•►►‖► REPLAY/STEP/ADVANCE/STEP buttons (25, 36)

12

List of Control Menu items

Item	Item Name, Function
	DISC (page 36) Selects the disc to be played.
	TITLE (page 36)/SCENE (page 36)/TRACK (page 36) Selects the title, scene, or track to be played.
	CHAPTER (page 36)/INDEX (page 36) Selects the chapter or index to be played.
	TRACK (page 36) Selects the track to be played.
	ORIGINAL/PLAY LIST (page 28) Selects the type of titles (DVD-RW) to be played, the ORIGINAL one, or an edited PLAY LIST.
	TIME/TEXT (page 36) Checks the elapsed time and the remaining playback time. Input the time code for picture and music searching. Displays the DVD/CD text, or the DATA CD/DATA DVD track/file name.
	PROGRAM (page 30) Selects the title, chapter, or track to play in the order you want.
	SHUFFLE (page 32) Plays the title, chapter, or track in random order.
	REPEAT (page 33) Plays the entire disc (all titles/all tracks/all albums) repeatedly or one title/chapter/track/album repeatedly.
	A-B REPEAT (page 34) Specifies the parts you want to play repeatedly.
	CUSTOM PICTURE MODE (page 46) Adjusts the video signal from the player. You can select the picture quality that best suits the program you are watching.
	SHARPNESS (page 47) Exaggerates the outline of the image to produce a sharper picture.
	TVS (TV Virtual Surround) (page 43) Selects the surround functions.
	PARENTAL CONTROL (page 56) Set to prohibit playback on this player.
	SETUP (page 61) QUICK Setup (page 22) Use Quick Setup to choose the desired language of the on-screen display, the aspect ratio of the TV and the audio output signal. CUSTOM Setup In addition to the Quick Setup setting, you can adjust various other settings. RESET Returns the settings in "SETUP" to the default setting.
	ALBUM (page 49) Selects the album to be played.
	FILE (page 36) Selects the JPEG image file to be played.
	DATE (page 52) Displays the date the picture was taken by a digital camera.

14

DVP-NC60P

	INTERVAL (page 54)
	Specifies the duration for which the slides are displayed on the screen.
	EFFECT (page 55)
	Selects the effects to be used for changing slides during a slide show.
	MODE (MP3, JPEG) (page 53)
	Selects the data type; MP3 audio track (AUDIO), JPEG image file (IMAGE) or both (AUTO) to be played when playing a DATA CD or DATA DVD.

ヅ **Hint**
The Control Menu icon indicator lights up in green
when you select any item
except "OFF" ("PROGRAM," "SHUFFLE,"
"REPEAT," "A-B REPEAT," "CUSTOM
PICTURE MODE," "SHARPNESS" only). The
"ORIGINAL/PLAY LIST" indicator lights up in
green when you select "PLAY LIST" (default
setting).

Hooking Up the Player

Follow steps 1 to 6 to hook up and adjust the settings of the player.

Notes
• Plug cords securely to prevent unwanted noise.
• Refer to the instructions supplied with the components to be connected.
• You cannot connect this player to a TV that does not have a video input jack.
• Be sure to disconnect the power cord of each component before connecting.

Step 1: Unpacking

Check that you have the following items:
• Audio/Video cord (phono plug × 3 ↔ phono plug × 3) (1)
• Remote commander (remote) (1)
• Size AA (R6) batteries (2)

Step 2: Inserting Batteries Into the Remote

You can control the player using the supplied remote. Insert two Size AA (R6) batteries by
matching the ⊕ and ⊖ ends on the batteries to the markings inside the compartment. When
using the remote, point it at the remote sensor ⌷ on the player.
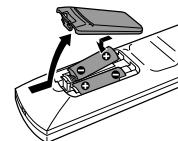
Notes
• Do not leave the remote in an extremely hot or humid place.
• Do not drop any foreign object into the remote casing, particularly when replacing the batteries.
• Do not expose the remote sensor to direct light from the sun or a lighting apparatus. Doing so may cause a malfunction.
• If you do not use the remote for an extended period of time, remove the batteries to avoid possible damage from battery leakage and corrosion.

Step 3: Connecting the Video Cords

Connect this player to your TV monitor, projector, or AV amplifier (receiver) using a video cord.
Select one of the patterns Ⓐ through Ⓒ, according to the input jack on your TV monitor,
projector, or AV amplifier (receiver).
In order to view progressive signal (480p) pictures with a compatible TV, projector, or monitor,
you must use pattern Ⓒ.

: Signal flow
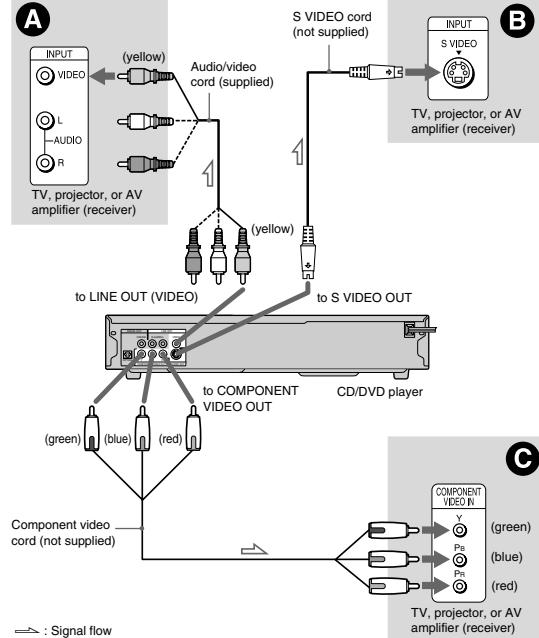
Ⓐ If you are connecting to a video input jack

Connect the yellow plug of an audio/video cord (supplied) to the yellow (video) jack. You will
enjoy standard quality images.
With this connection, select "NORMAL (INTERLACE)" (default) by pressing the
PROGRESSIVE button on the front panel.

Yellow — Yellow
White (L) — White (L)
Red (R) — Red (R)
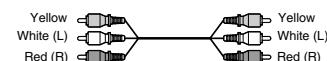
Ⓑ If you are connecting to an S VIDEO input jack

Connect an S VIDEO cord (not supplied). You will enjoy high quality images.
With this connection, select "NORMAL (INTERLACE)" (default) by pressing the
PROGRESSIVE button on the front panel.

Ⓒ If you are connecting to a monitor, projector, or AV amplifier (receiver) having component video input jacks (Y, PB, PR)

Connect the component via the COMPONENT VIDEO OUT jacks using a component video
cord (not supplied) or three video cords (not supplied) of the same kind and length. You will
enjoy accurate color reproduction and high quality images.
If your TV accepts progressive 480p format signals, use this connection and press the
PROGRESSIVE button on the front panel to output progressive signals. For details, see "Using
the PROGRESSIVE button" (page 19).

Green — Green
Blue — Blue
Red — Red
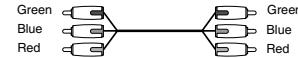
When connecting to a wide screen TV
Depending on the disc, the image may not fit your TV screen. To change the aspect ratio, see
page 63.

Notes
• Do not connect a VCR, etc., between your TV and the player. If you pass the player signals via the VCR,
you may not receive a clear image on the TV screen. If your TV has only one audio/video input jack,
connect the player to this jack.
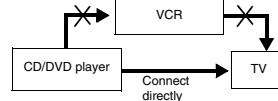
• Consumers should note that not all high definition television sets are fully compatible with this product and
may cause artifacts to be displayed in the picture. In case of 480 progressive scan picture problems, it is
recommended that the user switch the connection to the 'standard definition' output. If there are questions
regarding your TV set compatibility with this 480p DVD player model, please contact our customer service
center.

Using the PROGRESSIVE button

By using the PROGRESSIVE button on the front panel, you can select the signal format in which the player outputs video signals (Progressive or Interlace), and the conversion method for progressive signals. The PROGRESSIVE indicator lights up when the player outputs progressive signals.
Each time you press PROGRESSIVE, the display changes as follows:

PROGRESSIVE AUTO
↓
PROGRESSIVE VIDEO
↓
NORMAL (INTERLACE)

◆PROGRESSIVE AUTO
Select this setting when:
– your TV accepts progressive signals, and,
– the TV is connected to the COMPONENT VIDEO OUT jacks.
Normally select this under the above condition. This automatically detects the software type, and selects the appropriate conversion method.
Note that the picture will not be clear or no picture will appear if you select these settings when either of the above conditions is not met.

◆PROGRESSIVE VIDEO
Select this setting when:
– your TV accepts progressive signals, and,
– the TV is connected to the COMPONENT VIDEO OUT jacks, and,
– you want to fix the conversion method to PROGRESSIVE VIDEO for video based software.
Select this if the image is not clear when you select PROGRESSIVE AUTO.
Note that the picture will not be clear or no picture will appear if you select these settings when either of the above conditions is not met.

◆NORMAL (INTERLACE)
Select this setting when:
– your TV does not accept progressive signals, or,
– your TV is connected to jacks other than the COMPONENT VIDEO OUT jacks (LINE OUT (VIDEO) or S VIDEO OUT).

About DVD software types and the conversion method
DVD software can be divided into two types: film-based software and video-based software. Video-based software is derived from TV, such as dramas and sit-coms, and displays images at 30 frames/60 fields per second. Film-based software is derived from film and displays images at 24 frames per second. Some DVD software contains both video and film.
In order for these images to appear natural on your screen when output in progressive format, the progressive signals need to be converted to match the type of DVD software that you are watching.

Notes
• When you play video-based software in progressive signal format, sections of some types of images may appear unnatural due to the conversion process when output through the COMPONENT VIDEO OUT jacks. Images from the S VIDEO OUT and LINE OUT (VIDEO) jacks are unaffected as they are output in the normal (interlace) format.
• When using LINE OUT (VIDEO) or S VIDEO OUT, the picture may appear to flicker each time the PROGRESSIVE button on the front panel is pressed (Interlace switches to Progressive or vice versa).

19

Ⓐ Connecting to audio L/R input jacks

This connection will use your TV's or stereo amplifier's (receiver's) two speakers for sound. Connect using the audio/video cord (supplied).

Yellow — Yellow
White (L) — White (L)
Red (R) — Red (R)
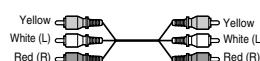
• Surround effect (page 44)
TV: Dynamic Theater, Dynamic, Wide, Night

Stereo amplifier (receiver): Standard, Night

Ⓑ Connecting to a digital audio input jack

If your AV amplifier (receiver) has a Dolby[1] Digital or DTS[2] decoder and a digital input jack, use this connection.
Connect using a coaxial or optical digital cord (not supplied).

Coaxial cord
Optical cord
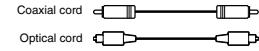
• Surround effect
Dolby Digital (5.1ch), DTS (5.1ch)

[1] Manufactured under license from Dolby Laboratories.
"Dolby," "Pro Logic," and the double-D symbol are trademarks of Dolby Laboratories.
[2] "DTS" and "DTS Digital Out" are trademarks of Digital Theater Systems, Inc.

Notes
• After you have completed the connection, make the appropriate settings in Quick Setup (page 22). Otherwise, no sound or a loud noise will come from your speakers.
• The surround sound effects of this player cannot be used with this connection.
• In order to listen to DTS sound tracks, you must use this connection. DTS sound tracks are not output through the LINE OUT L/R (AUDIO) jacks, even if you set "DTS" to "ON" in Quick Setup (page 22).

21

Step 4: Connecting the Audio Cords

Select one of the following patterns Ⓐ or Ⓑ, according to the input jack on your TV monitor, projector, or AV amplifier (receiver).
This will enable you to listen to sound.
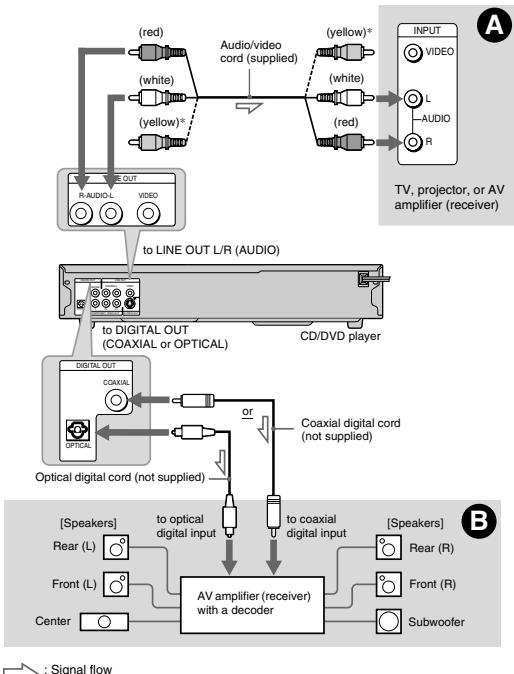
: Signal flow

* The yellow plug is used for video signals (page 17).

💡 **Hint**
For correct speaker location, see the operating instructions supplied with the connected components.

20

Step 5: Connecting the Power Cord

Plug the player and TV power cords into an AC outlet.

Step 6: Quick Setup

Follow the steps below to make the minimum number of basic adjustments for using the player. To skip an adjustment, press ▶▶|. To return to the previous adjustment, press |◀◀.
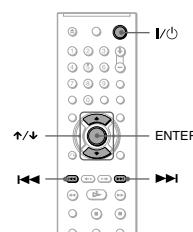

1 **Turn on the TV.**

2 **Press I/⏻.**

3 **Switch the input selector on your TV so that the signal from the player appears on the TV screen.**

"Press [ENTER] to run QUICK SETUP" (press enter to run Quick Setup) appears at the bottom of the screen. If this message does not appear, select "QUICK" (quick) under "SETUP" (setup) in the Control Menu to run Quick Setup (page 62).

4 **Press ENTER without inserting a disc.**

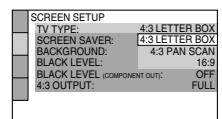The Setup Display for selecting the language used in the on-screen display appears.
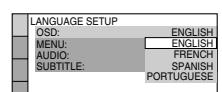
5 **Press ↑/↓ to select a language.**

The player displays the menu and subtitles in the selected language.

6 **Press ENTER.**

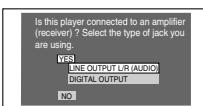The Setup Display for selecting the aspect ratio of the TV to be connected appears.

22

7 Press ↑/↓ to select the setting that matches your TV type.

◆ If you have a 4:3 standard TV
• 4:3 LETTER BOX or 4:3 PAN SCAN (page 63)

◆ If you have a wide-screen TV or a 4:3 standard TV with a wide-screen mode
• 16:9 (page 63)

8 Press ENTER.

The Setup Display for selecting the type of jack used to connect your amplifier (receiver) appears.

```
Is this player connected to an amplifier
(receiver) ? Select the type of jack you
are using.
    YES
    LINE OUTPUT L/R (AUDIO)
    DIGITAL OUTPUT
    NO
```

9 Press ↑/↓ to select the type of jack (if any) you are using to connect to an amplifier (receiver), then press ENTER.

If you did not connect an AV amplifier (receiver), select "NO," then go to step 13.
If you connected an AV amplifier (receiver) using just an audio cord, select "YES: LINE OUTPUT L/R (AUDIO)," then go to step 13.
If you connected an AV amplifier (receiver) using a digital coaxial or optical cord, select "YES: DIGITAL OUTPUT."

10 Press ↑/↓ to select the type of Dolby Digital signal you wish to send to your amplifier (receiver).

If your AV amplifier (receiver) has a Dolby Digital decoder, select "DOLBY DIGITAL." Otherwise, select "D-PCM."

```
AUDIO SETUP
AUDIO ATT:            OFF
AUDIO DRC:           STANDARD
DOWNMIX:             DOLBY SURROUND
DIGITAL OUT:         ON
  DOLBY DIGITAL:     D-PCM
  DTS:               D-PCM
  48kHz/96kHz PCM:   DOLBY DIGITAL
```
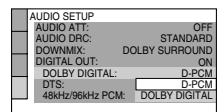
11 Press ENTER.

"DTS" is selected.

```
AUDIO SETUP
AUDIO ATT:            OFF
AUDIO DRC:           STANDARD
DOWNMIX:             DOLBY SURROUND
DIGITAL OUT:         ON
  DOLBY DIGITAL:     D-PCM
  DTS:               OFF
  48kHz/96kHz PCM:   OFF
                     ON
```
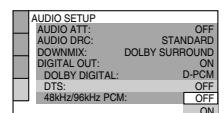
12 Press ↑/↓ to select whether or not you wish to send a DTS signal to your amplifier (receiver).

If your AV amplifier (receiver) has a DTS decoder, select "ON." Otherwise, select "OFF."

13 Press ENTER.

Quick Setup is finished. All connections and setup operations are complete.

Playing Discs DVD-V

DVD-RW | VCD | CD | DATA CD
DATA DVD

Depending on the DVD or VIDEO CD, some operations may be different or restricted. Refer to the operating instructions supplied with your disc.

DISC SKIP

ENTER

DISC SKIP

1 Turn on your TV.

2 Press I/⏻.

The player turns on.

3 Switch the input selector on your TV so that the signal from the player appears on the TV screen.

◆ When using an amplifier (receiver)
Turn on the amplifier (receiver) and select the appropriate channel so that you can hear sound from the player.

---

4 Press ⏏ on the player, and place a disc on the disc tray.

To place other discs on the tray, press DISC SKIP and place the discs in the order you want to play them.
Each time you press DISC SKIP, the disc tray turns so that you can place the discs on the empty compartments. The player plays from the last disc placed on the tray.

With the playback side facing down

Disc compartment number

5 Press ▷.

The disc tray closes. The player starts playback (continuous play). Adjust the volume on the TV or the amplifier (receiver).
Depending on the disc, a menu may appear on the TV screen. For DVD VIDEOs, see page 28. For VIDEO CDs, see page 29.

To turn off the player
Press I/⏻. The player enters standby mode.

✷ Hint
You can have the player turn off automatically whenever you leave it in stop mode for more than 30 minutes. To turn this function on or off, set "AUTO POWER OFF" in "CUSTOM SETUP" to "ON" or "OFF" (page 64).

Notes on playing DTS sound tracks on a DVD VIDEO
• DTS audio signals are output only through the DIGITAL OUT (COAXIAL or OPTICAL) jack.
• When you play a DVD VIDEO with DTS sound tracks, set "DTS" to "ON" in "AUDIO SETUP" (page 66).
• If you connect the player to audio equipment without a DTS decoder, do not set "DTS" to "ON" in "AUDIO SETUP" (page 66). A loud noise may come out from the speakers, affecting your ears or causing the speakers to be damaged.

Additional operations

DISC 1-5   ▷   ⏸ ■

DISC SKIP

CLEAR

REPLAY ◄●/◄‖I   ●➡/‖I► ADVANCE
⏮   ⏭
ZOOM   ■
SLOW PLAY   DISC SKIP
FAST PLAY

To	Operation
Select a disc	Press DISC 1–5 on the player
Stop	Press ■
Pause	Press ‖I
Resume play after pause	Press ‖I or ▷
Go to the next disc	Press DISC SKIP
Go to the next chapter, track, or scene in continuous play mode	Press ⏭
Go back to the previous chapter, track, or scene in continuous play mode	Press ⏮
Stop play and remove the disc	Press ⏏
Replay the previous scene*[1]	Press ◄●/◄‖I REPLAY during playback

To	Operation
Briefly fast forward the current scene*[2]	Press ●➡/‖I► ADVANCE during playback
Magnify the image*[3]	Press ZOOM repeatedly. Press CLEAR to cancel.

*[1] DVD VIDEOs/DVD-RWs/DVD-Rs only
*[2] DVD VIDEOs/DVD-RWs/DVD-Rs/ DVD+RWs only
*[3] Video and JPEG pictures only (except BACKGROUND pictures). You can move the enlarged picture using ◄/↑/↓/►. Depending upon the contents of the disc, the zoom function may be canceled automatically when the picture is moved.

Note
You may not be able to use the Replay or Advance function with some scenes.

Playback quickly or slowly with sound

You can listen to dialog or sound while playing the current scene quickly or slowly.

During playback, press FAST PLAY or SLOW PLAY.
The speed changes when you press either FAST PLAY or SLOW PLAY.

To return to normal playback
Press ▷.

Notes
• You can only use this function with DVDs/ VIDEO CDs/Super VCDs and DVD-RWs in VR mode only.
• "Operation not possible" will appear when maximum or minimum speed is reached.
• During Fast Play or Slow Play mode, you cannot change the angle (page 45), subtitle (page 45) and sound (page 42). The sound can only be changed for VIDEO CDs/Super VCDs.
• Fast Play and Slow Play functions do not work when playing DTS sound tracks.
• You cannot use Fast Play or Slow Play functions when playing a still picture on DVD-RW in VR mode.

Replacing discs while playing a disc (EXCHANGE)

You can open the disc tray while playing a disc so that you can check which discs are to be played next and replace discs without interrupting playback of the current disc.

DISC SKIP
EXCHANGE

DISC SKIP

1 Press EXCHANGE.

The disc tray opens and two disc compartments appear. Even if the player is playing a disc, it doesn't stop playing.

2 Replace the discs in the compartments with new ones.

3 Press DISC SKIP.

The disc tray turns and another two disc compartments appear.

4 Replace the discs in the compartments with new ones.

5 Press EXCHANGE.

The disc tray closes.

✷ Hint
While the disc tray is open,
– If the playback of the current disc end, the player stops playing. If the disc is played in One Disc Repeat Play mode (page 33), the current disc starts playing again.
– In Shuffle Play mode (page 32), titles/tracks/ chapters are reshuffled only on the current disc.
– In Program Play mode (page 30), the titles/tracks/ chapters only on the current disc are played.

Note
Do not push the disc tray to close in step 5, as you may damage the player.

Locking the disc tray (Child Lock)

You can lock the disc tray to prevent children from opening it.

When the player is in standby mode, press ↩ RETURN, ENTER, and then I/⏻ on the remote.
The player turns on and "LOCKED" appears on the front panel display. The ⏏ and EXCHANGE buttons and ⏏ button on the player or the remote do not work while the Child Lock is set.

To unlock the disc tray
When the player is in standby mode, press ↩ RETURN, ENTER, and then I/⏻ again.

Note
Even if you select "RESET" under "SETUP" in the Control Menu (page 61), the disc tray remains locked.

Resuming Playback From the Point Where You Stopped the Disc (Multi-disc Resume) `DVD-V` `VCD`

The player stores the point where you stopped the disc for up to 6 discs and resumes playback the next time you insert the same disc. If you store a resume playback point for the seventh disc, the resume playback point for the first disc is deleted.
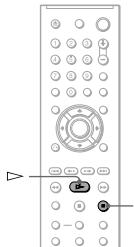
1 While playing a disc, press ■ to stop playback.

"RESUME" appears on the front panel display.

2 Press ▷.

The player starts playback from the point where you stopped the disc in step 1.

💡 **Hint**
To play from the beginning of the disc, press ■ twice, then press ▷.

- "MULTI-DISC RESUME" in "CUSTOM SETUP" must be set to "ON" (default) for this function to work (page 65).
- The point where you stopped playing is cleared when:
  – you change the play mode.
  – you change the settings on the Setup Display.
- For DVD-RWs in VR mode, CDs, DATA CDs, and DATA DVDs the player remembers the resume playback point for the current disc. The resume point is cleared when:
  – you press DISC SKIP or DISC 1–5.
  – you opened the disc tray.
  – you disconnect the power cord.
  – the player enters standby mode (DATA CD/DATA DVD only).
- Resume Play does not work during Shuffle Play and Program Play.
- This function may not work with some discs.
- If "MULTI-DISC RESUME" in "CUSTOM SETUP" is set to "ON" and you playback a recorded disc such as DVD-RW, the player may playback other recorded discs from the same resume point. To play from the beginning, press ■ twice and then press ▷.

Playing Discs

27

Using the DVD's Menu `DVD-V`

A DVD is divided into long sections of a picture or a music feature called "titles." When you play a DVD which contains several titles, you can select the title you want using the TOP MENU button.
When you play DVDs that allow you to select items such as language for the sound and subtitles, select these items using the MENU button.

Number buttons
TOP MENU — MENU
◄/▲/▼/► — ENTER
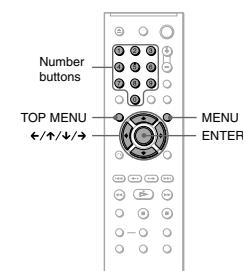
1 Press TOP MENU or MENU.

The disc's menu appears on the TV screen.
The contents of the menu vary from disc to disc.

2 Press ◄/▲/▼/► or the number buttons to select the item you want to play or change.

If you press the number buttons, the following display appears.
Press the number buttons to select the item you want.

```
[   ] 1
```

3 Press ENTER.

28

Selecting "ORIGINAL" or "PLAY LIST" on a DVD-RW `DVD-RW`

Some DVD-RWs in VR (Video Recording) mode have two types of titles for playback: originally recorded titles (ORIGINAL) and titles that can be created on recordable DVD players for editing (PLAY LIST). You can select the type of title to be played.
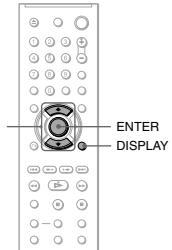
▲/▼ — ENTER
— DISPLAY

1 Press DISPLAY when the player is in stop mode.

The Control Menu appears.

2 Press ▲/▼ to select [   ] (ORIGINAL/PLAY LIST), then press ENTER.

The options for "ORIGINAL/PLAY LIST" appear.

```
1
12(27)
18(34)          DVD-RW
T  1:30:50
PLAY LIST
PLAY LIST
ORIGINAL
```
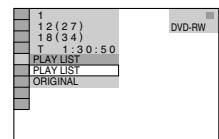
3 Press ▲/▼ to select a setting.
- PLAY LIST: plays the titles created from "ORIGINAL" for editing.
- ORIGINAL: plays the titles originally recorded.

4 Press ENTER.

Playing VIDEO CDs With PBC Functions (PBC Playback) `VCD`

PBC (Playback Control) allows you to play VIDEO CDs interactively by following the menu on the TV screen.

Number buttons
— ENTER
↩ RETURN
|◄◄   ►►|
▷   ■

1 Start playing a VIDEO CD with PBC functions.

The menu for your selection appears.

2 Press the number buttons to select the item number you want.

3 Press ENTER.

4 Follow the instructions in the menu for interactive operations.

Refer to the instructions supplied with the disc, as the operating procedure may differ depending on the VIDEO CD.

To return to the menu
Press ↩ RETURN.

Playing Discs

💡 **Hint**
To play without using PBC, press |◄◄ /►►| or the number buttons while the player is stopped to select a track, then press ▷ or ENTER.
"Play without PBC" appears on the TV screen and the player starts continuous play. You cannot play still pictures such as a menu.
To return to PBC playback, press ■ twice then press ▷.

Note
Depending on the VIDEO CD, "Press ENTER" in step 3 may appear as "Press SELECT" in the instructions supplied with the disc. In this case, press ▷.

Various Play Mode Functions (Program Play, Shuffle Play, Repeat Play, A-B Repeat Play)

You can set the following play modes:
- Program Play (page 30)
- Shuffle Play (page 32)
- Repeat Play (page 33)
- A-B Repeat Play (page 34)

CLEAR — ENTER
▲/▼/► —
— DISPLAY
▷
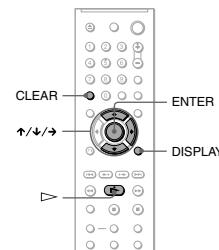
Note
The play mode is canceled when:
– you open the disc tray.
– the player enters standby mode by pressing I/⏻.

Creating your own program (Program Play) `DVD-V` `VCD` `CD`

You can play the contents of a disc in the order you want by arranging the order of the titles, chapters, or tracks on the disc to create your own program. You can program up to 99 titles, chapters, and tracks.
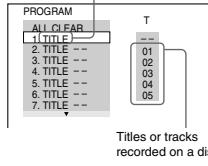
1 Press DISPLAY.
The Control Menu appears.

2 Press ▲/▼ to select [   ] (PROGRAM), then press ENTER.
The options for "PROGRAM" appear.

30

DVP-NC60P

```
1
12(27)
18(34)                    DVD VIDEO
T    1:32:55
OFF
OFF
SET →
ON
```
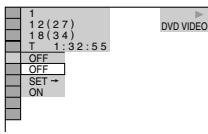
3 Press ↑/↓ to select "SET →," then press ENTER.

"TRACK" is displayed when you play a VIDEO CD, or CD.

```
PROGRAM
ALL CLEAR              T
1. TITLE --           --
2. TITLE --           01
3. TITLE --           02
4. TITLE --           03
5. TITLE --           04
6. TITLE --           05
7. TITLE --
```

Titles or tracks recorded on a disc

4 Press →.

The cursor moves to the title or track row "T" (in this case, "01").

```
PROGRAM
ALL CLEAR          T     C
1. TITLE --        --    ALL
2. TITLE --        01    01
3. TITLE --        02    02
4. TITLE --        03    03
5. TITLE --        04    04
6. TITLE --        05    05
7. TITLE --              06
```
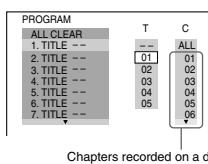
Chapters recorded on a disc

5 Select the title, chapter, or track you want to program.

◆ **When playing a DVD VIDEO**

For example, select chapter "03" of title "02."

Press ↑/↓ to select "02" under "T," then press ENTER.

```
PROGRAM
ALL CLEAR          T     C
1. TITLE --        --    ALL
2. TITLE --        01    01
3. TITLE --        02    02
4. TITLE --        03    03
5. TITLE --        04    04
6. TITLE --        05    05
7. TITLE --              06
```

Next, press ↑/↓ to select "03" under "C," then press ENTER.

```
PROGRAM               T
ALL CLEAR
1. TITLE 02 – 03      --
2. TITLE --           01
3. TITLE --           02
4. TITLE --           03
5. TITLE --           04
6. TITLE --           05
7. TITLE --
```
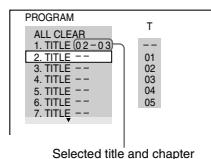
Selected title and chapter

◆ **When playing a VIDEO CD, or CD**

For example, select track "02."

Press ↑/↓ to select "02" under "T," then press ENTER.

Selected track
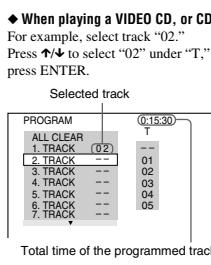
```
PROGRAM       (0:15:30)
ALL CLEAR              T
1. TRACK --           --
2. TRACK (02)         01
3. TRACK --           02
4. TRACK --           03
5. TRACK --           04
6. TRACK --           05
7. TRACK --
```
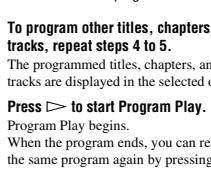
Total time of the programmed tracks

6 To program other titles, chapters, or tracks, repeat steps 4 to 5.

The programmed titles, chapters, and tracks are displayed in the selected order.

7 Press ▷ to start Program Play.

Program Play begins.

When the program ends, you can restart the same program again by pressing ▷.

To return to normal play

Press CLEAR, or select "OFF" after step 2. To play the same program again, select "ON" in step 3 and press ENTER.

To change or cancel a program

1 Follow steps 1 to 3 of "Creating your own program (Program Play)."

2 Select the program number of the title, chapter, or track you want to change or cancel using ↑/↓ and press →. If you want to delete the title, chapter, or track from the program, press CLEAR.

→continued **31**

3 Follow step 5 for new programming. To cancel a program, select "--" under "T," then press ENTER.

To cancel all of the titles, chapters, or tracks in the programmed order

1 Follow steps 1 to 3 of "Creating your own program (Program Play)."

2 Press ↑ and select "ALL CLEAR."

3 Press ENTER.

ϔ **Hint**

You can perform Repeat Play or Shuffle Play of programmed titles, chapters, or tracks. During Program Play, follow the steps of Repeat Play (page 33) or Shuffle Play (page 32).

Notes

- All Discs Repeat is automatically changed into One Disc Repeat when you set to program play mode (page 33). You can only program the contents of the current disc.
- When you program tracks on a Super VCD, the total playing time is not displayed.
- You cannot use this function with VIDEO CDs or Super VCDs with PBC playback.

Playing in random order (Shuffle Play) [DVD-V] [VCD] [CD]

You can have the player "shuffle" titles, chapters, or tracks. Subsequent "shuffling" may produce a different playing order.

1 Press DISPLAY during playback.

The Control Menu appears.

2 Press ↑/↓ to select [ ] (SHUFFLE), then press ENTER.

The options for "SHUFFLE" appear.

```
1
12(27)
18(34)                 DVD VIDEO
T    1:32:55
OFF
OFF
TITLE
CHAPTER
```

32
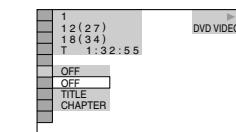
3 Press ↑/↓ to select the item to be shuffled.

◆ **When playing a DVD VIDEO**
- TITLE
- CHAPTER

◆ **When playing a VIDEO CD or CD**
- TRACK

◆ **When Program Play is activated**
- ON: shuffles titles, chapters, or tracks selected in Program Play.

4 Press ENTER.

Shuffle Play starts.

To return to normal play

Press CLEAR, or select "OFF" in step 3.

ϔ **Hints**
- You can set Shuffle Play while the player is stopped. After selecting the "SHUFFLE" option, press ▷. Shuffle Play starts.
- Up to 200 chapters in a disc can be played in random order when "CHAPTER" is selected.

Notes
- You cannot use this function with VIDEO CDs or Super VCDs with PBC playback.
- All Discs Repeat is automatically changed into One Disc Repeat when you set to shuffle play mode. You can only shuffle the contents of the current disc.

Playing repeatedly (Repeat Play) [DVD-V] [DVD-RW] [VCD] [CD] [DATA CD] [DATA DVD]

You can play all of the titles or tracks on a disc, or a single title, chapter, or track repeatedly.

You can use a combination of Shuffle or Program Play modes.

1 Press DISPLAY during playback.

The Control Menu appears.

2 Press ↑/↓ to select [ ] (REPEAT), then press ENTER.

The options for "REPEAT" appear.

```
1
12(27)
18(34)                 DVD VIDEO
T    1:32:55
OFF
OFF
ALL DISCS
ONE DISC
```

3 Press ↑/↓ to select the item to be repeated.

◆ **When playing a DVD VIDEO**
- ALL DISCS: repeats all of the discs.
- ONE DISC: repeats all of the titles on the current disc.
- TITLE: repeats the current title on a disc.
- CHAPTER: repeats the current chapter.

◆ **When playing a DVD-RW**
- ALL DISCS: repeats all of the discs.
- ONE DISC: repeats all of the titles of the selected type.
- TITLE: repeats the current title on a disc.
- CHAPTER: repeats the current chapter.

◆ **When playing a VIDEO CD, or CD**
- ALL DISCS: repeats all of the discs.
- ONE DISC: repeats all of the tracks on the current disc.
- TRACK: repeats the current track.

◆ **When playing a DATA CD/DATA DVD with MP3 audio tracks or JPEG image files**
- ALL DISCS: repeats all of the discs.
- ONE DISC: repeats all of the albums on the current disc.

- ALBUM: repeats the current album.
- TRACK (MP3 audio tracks only): repeats the current track.

◆ **When Program Play or Shuffle Play is activated**
- ON: repeats Program Play or Shuffle Play.

4 Press ENTER.

Repeat Play starts.

To return to normal play

Press CLEAR, or select "OFF" in step 3.

ϔ **Hint**

You can set Repeat Play while the player is stopped. After selecting the "REPEAT" option, press ▷. Repeat Play starts.

Notes
- You cannot use this function with VIDEO CDs or Super VCDs with PBC playback.
- When repeating a DATA CD/DATA DVD which contains MP3 audio tracks and JPEG image files, and their playing times are not the same, the sound will not match the image.
- When "MODE (MP3, JPEG)" is set to "IMAGE (JPEG)" (page 53), you cannot select "TRACK."

→continued **33**

Repeating a specific portion (A-B Repeat Play)

[DVD-V] [DVD-RW] [VCD] [CD]

You can play a specific portion of a title, chapter or track repeatedly. (This function is useful when you want to memorize lyrics, etc.)

1 Press DISPLAY during playback.

The Control Menu appears.

2 Press ↑/↓ to select [ ] (A-B REPEAT), then press ENTER.

The options for "A-B REPEAT" appear.

```
1
12(27)
18(34)                 DVD VIDEO
T    1:32:55
OFF
SET →
OFF
```

3 Press ↑/↓ to select "SET →," then press ENTER.

The "A-B REPEAT" setting bar appears.

```
A 18 - 1:32:30   B
```

4 During playback, when you find the starting point (point A) of the portion to be played repeatedly, press ENTER.

The starting point (point A) is set.

```
A 18 - 1:32:30   B 18 - 1:33:05
```

5 When you reach the ending point (point B), press ENTER again.

The set points are displayed and the player starts repeating this specific portion.
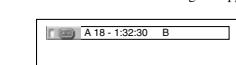
To return to normal play

Press CLEAR, or select "OFF" in step 3.

Notes
- When you set A-B Repeat Play, the settings for Shuffle Play, Repeat Play, and Program Play are canceled.
- A-B Repeat Play does not work across multiple titles.
- You may not set A-B Repeat Play for contents on a DVD-RW (VR mode) that contains still pictures.
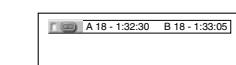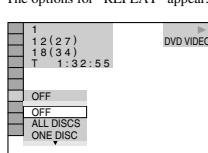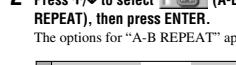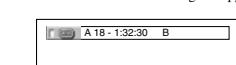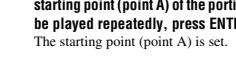
34

Playing Discs

1-8

Searching for a Particular Point on a Disc (Search, Scan, Slow-motion Play, Freeze Frame)

You can quickly locate a particular point on a disc by monitoring the picture or playing back slowly.
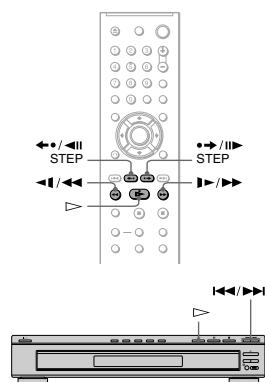
Notes
- Depending on the disc, you may not be able to do some of the operations described.
- For DATA CDs/DATA DVDs, you can search for a particular point only on an MP3 audio track.

Locating a point quickly using the PREV (previous)/NEXT (next) buttons (Search)

`DVD-V` `DVD-RW` `VCD` `CD` `DATA CD` `DATA DVD`

You can search for the next or previous chapter, track, or scene using |◀◀/▶▶| on the player.
During playback, press ▶▶| or |◀◀ once briefly to go to the next or previous chapter/track/scene. Or, press and hold ▶▶| or |◀◀ to search forward or backwards, and release the button when you find the point you want to return to normal playback. (Search)

Locating a point quickly by playing a disc in fast forward or fast reverse (Scan)

`DVD-V` `DVD-RW` `VCD` `CD` `DATA CD` `DATA DVD`

Press ◀| ◀◀ or ▶▶ |▶ while playing a disc. When you find the point you want, press ▷ to return to normal speed. Each time you press ◀| ◀◀ or ▶▶ |▶ during scan, the scan speed changes. With each press the indication changes as shown below. Actual speeds may differ between discs.

Playback direction
×2▶ → 1▶▶ → 2▶▶ → 3▶▶

3▶▶ (DVD VIDEO/DVD-RW/VIDEO CD only)
×2▶ (DVD VIDEO/CD only)

Opposite direction
×2◀ → 1◀◀ → 2◀◀ → 3◀◀

3◀◀ (DVD VIDEO/DVD-RW/VIDEO CD only)
×2◀ (DVD VIDEO only)

The "×2▶"/ "×2◀" playback speed is about twice the normal speed.
The "3▶▶"/"3◀◀" playback speed is faster than "2▶▶"/"2◀◀" and the "2▶▶"/"2◀◀" playback speed is faster than "1▶▶"/ "1◀◀."

Watching frame by frame (Slow-motion Play)

`DVD-V` `DVD-RW` `VCD`

Press ◀| ◀◀ or ▶▶ |▶ when the player is in pause mode. To return to normal speed, press ▷.
Each time you press ◀| ◀◀ or ▶▶ |▶ during Slow-motion Play, the playback speed changes. Two speeds are available. With each press the indication changes as follows:

Playback direction
2 |▶ ⟷ 1 |▶

Opposite direction (DVD/DVD-RW only)
2 ◀| ⟷ 1 ◀|

The "2 |▶"/"2 ◀|" playback speed is slower than "1 |▶"/"1 ◀|."

Playing one frame at a time (Freeze Frame) `DVD-V` `DVD-RW` `VCD`

When the player is in the pause mode, press •→/III▶ STEP to go to the next frame. Press ◀←•/◀III STEP to go to the preceding frame (DVD/DVD-RW only). To return to normal playback, press ▷.

Note
You cannot search for a still picture on a DVD-RW in VR mode.

Searching for a Title/ Chapter/Track/Scene, etc. `DVD-V` `DVD-RW` `VCD` `CD` `DATA CD` `DATA DVD`

You can search a DVD by title or chapter, and you can search a VIDEO CD/CD/DATA CD/ DATA DVD by track, index, or scene. As titles and tracks are assigned unique numbers on the disc, you can select the desired one by entering its number. You can also search for a scene using the time code.
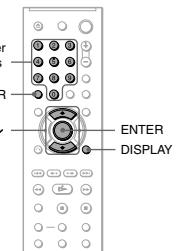
1 Press DISPLAY. (When playing a DATA CD or DATA DVD with JPEG image files, press twice.)
The Control Menu appears.

2 Press ↑/↓ to select the search method.

◆ **When playing a DVD VIDEO/DVD-RW**
- DISC
- TITLE
- CHAPTER
- TIME/TEXT

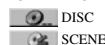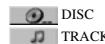Select "TIME/TEXT" to search for a starting point by inputting the time code.

36

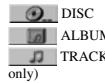◆ **When playing a VIDEO CD or Super VCD without PBC Playback**
- DISC
- TRACK
- INDEX

◆ **When playing a VIDEO CD or Super VCD with PBC Playback**
- DISC
- SCENE

◆ **When playing a CD**
- DISC
- TRACK

◆ **When playing a DATA CD/DATA DVD**
- DISC
- ALBUM
- TRACK (MP3 audio tracks only)
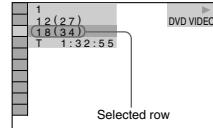- FILE (JPEG image files only)

Example: when you select CHAPTER
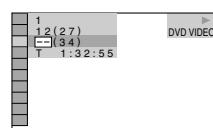
"** (**)" is selected (** refers to a number). The number in parentheses indicates the total number of titles, chapters, tracks, indexes, scenes, albums or files.

```
1
12(27)
(18(34)
T   1:32:55        DVD VIDEO
                   Selected row
```

3 Press ENTER.
"** (**)" changes to "-- (**)."

```
1
12(27)
--(34)            DVD VIDEO
T   1:32:55
```

4 Press ↑/↓ or the number buttons to select the title, chapter, track, index, scene, etc., number you want to search for.

If you make a mistake
Cancel the number by pressing CLEAR, then select another number.

5 Press ENTER.
The player starts playback from the selected number.

To search for a scene using the time code (DVD VIDEO/DVD-RW only)

1 In step 2, select TIME/TEXT. "T **:**:**" (playing time of the current title) is selected.

2 Press ENTER.
"T **:**:**" changes to "T --:--:--."

3 Input the time code using the number buttons, then press ENTER.
For example, to find the scene at 2 hours, 10 minutes, and 20 seconds after the beginning, just enter "2:10:20."

ϒ Hints
- When the Control Menu display is turned off, you can search for a chapter (DVD VIDEO/DVD-RW) or track (CD/DATA CD/DATA DVD) by pressing the number buttons and ENTER.
- You can display the first scene of titles, chapters, or tracks recorded on the disc on a screen divided into 9 sections. You can start playback directly by selecting one of the scenes. For details, see "Searching by Scene (PICTURE NAVIGATION)" (page 38).

Notes
- The title, chapter, or track number displayed is the same number recorded on the disc.
- You cannot search for a scene on a DVD+RW using the time code.

37

Searching by Scene (PICTURE NAVIGATION) `DVD-V` `VCD`

You can divide the screen into 9 subscreens and find the desired scene quickly.
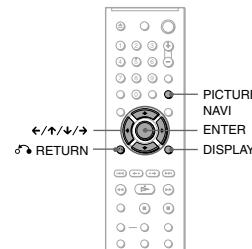
1 Press PICTURE NAVI during playback.
The following display appears.

```
CHAPTER VIEWER → ENTER
```
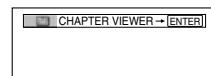
2 Press PICTURE NAVI repeatedly to select an item.
- CHAPTER VIEWER (DVD VIDEO only): displays the first scene of each chapter.
- TITLE VIEWER (DVD VIDEO only): displays the first scene of each title.
- TRACK VIEWER (VIDEO CD/ Super VCD only): displays the first scene of each track.

3 Press ENTER.
The first scene of each chapter, title, or track appears as follows.

```
1    2    3
4    5    6
7    8    9   ▼
```
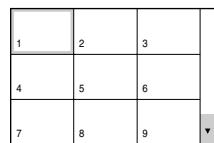
4 Press ←/↑/↓/→ to select a chapter, title, or track, and press ENTER.
Playback starts from the selected scene.

To return to normal play during setting
Press ⮌ RETURN or DISPLAY.

ϒ Hint
If there are more than 9 chapters, titles, or tracks, ▼ is displayed at the bottom right of the screen.
To display the additional chapters, titles, or tracks, select the bottom scenes and press ↓. To return to the previous scene, select the top scenes and press ↑.

Note
Depending on the disc, you may not be able to select some items.

38

Viewing Information About the Disc

Checking the Playing Time and Remaining Time `DVD-V` `DVD-RW` `VCD` `CD` `DATA CD` `DATA DVD`

You can check the playing time and remaining time of the current title, chapter, or track. Also, you can check the DVD/CD text or track name (MP3 audio) recorded on the disc.

TIME/TEXT

1 Press TIME/TEXT during playback.

The following display appears.

T 1:01:57
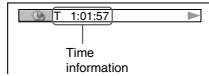
Time information

2 Press TIME/TEXT repeatedly to change the time information.

The available time information depends upon the type of disc you are playing.

◆ **When playing a DVD VIDEO or DVD-RW**
- T *:*:* (hours: minutes: seconds)
  Playing time of the current title
- T−*:*:*
  Remaining time of the current title
- C *:*:*
  Playing time of the current chapter
- C−*:*:*
  Remaining time of the current chapter

◆ **When playing a VIDEO CD or Super VCD (with PBC functions)**
- *:* (minutes: seconds)
  Playing time of the current scene

◆ **When playing a VIDEO CD (without PBC functions), or CD**
- T *:* (minutes: seconds)
  Playing time of the current track
- T−*:*
  Remaining time of the current track
- D *:*
  Playing time of the current disc
- D−*:*
  Remaining time of the current disc

◆ **When playing a Super VCD (without PBC functions)**
- T *:* (minutes: seconds)
  Playing time of the current track

◆ **When playing a DATA CD or DATA DVD (MP3 audio)**
- T *:* (minutes: seconds)
  Playing time of the current track

Checking the play information of the disc

To check the DVD/CD text
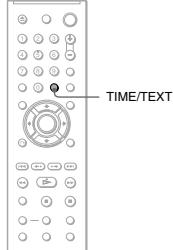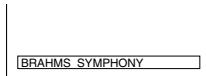Press TIME/TEXT repeatedly in step 2 to display text recorded on the DVD/CD. The DVD/CD text appears only when text is recorded in the disc. You cannot change the text. If the disc does not contain text, "NO TEXT" appears.

BRAHMS SYMPHONY

To check DATA CD/DATA DVD (MP3 audio) album name, etc.
By pressing TIME/TEXT while playing MP3 audio tracks on a DATA CD/DATA DVD, you can display the name of the album/track, and the audio bit rate (the amount of data per second of the current audio track) on your TV screen.

Bit rate

T 17:30 128k
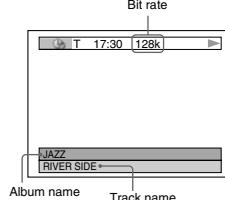
JAZZ
RIVER SIDE

Album name   Track name

40

Checking the information on the front panel display

You can view the time information and text displayed on the TV screen also on the front panel display. The information on the front panel display changes as follows when you change the time information on your TV screen.

When playing a DVD VIDEO or DVD-RW

Playing time of the current title
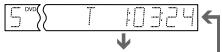
5 T 1:03:24

Remaining time of the current title

5 T−1:15:36

Playing time of the current chapter

5 C 0:22:30

Remaining time of the current chapter

5 C−0:13:20

Text

5 BRAHMS
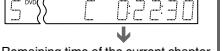
Current title and chapter number
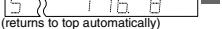
5 T 16. 8
(returns to top automatically)

When playing a DATA CD/DATA DVD (MP3 audio)

Track playing time and number of current disc track

4 50 2:25

Track name

4 ROCK 17

Current album and track number
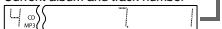
4 7 1
(returns to top automatically)

When playing a VIDEO CD (without PBC functions), or CD

Track playing time and current disc track number

3 2. 2:25

Remaining time of the current track

3 2. −1:50

Playing time of the current disc

3 32:12
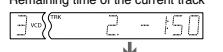
Remaining time of the disc

3 −20:18

Text

3 BRAHMS
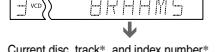
Current disc, track*, and index number*

3 2. 1
(returns to top automatically)
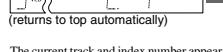
* The current track and index number appear only when playing a VIDEO CD.

☼ **Hints**
- When playing VIDEO CDs without PBC functions, the track number and the index number are displayed after the text.
- When playing VIDEO CDs with PBC functions, the scene number or the playing time are displayed.
- Long text that does not fit in a single line will scroll across the front panel display.
- You can also check the time information and text using the Control Menu (page 13).

Notes
- Depending on the type of disc being played, the DVD/CD text or track name may not be displayed.
- The player can only display the first level of the DVD/CD text, such as the disc name or title.
- Playing time of MP3 audio tracks may not be displayed correctly.
- If you play a disc containing JPEG image files only, "NO AUDIO DATA" appears when "MODE (MP3, JPEG)" is set to "AUTO," "JPEG" appears when "MODE (MP3, JPEG)" is set to "IMAGE (JPEG)" in the front panel display.

41

Sound Adjustments

Changing the Sound `DVD-V` `DVD-RW` `VCD` `CD` `DATA CD` `DATA DVD`

When playing a DVD VIDEO recorded in multiple audio formats (PCM, Dolby Digital, or DTS), you can change the audio format. If the DVD VIDEO is recorded with multilingual tracks, you can also change the language.
With CDs, DATA CDs, DATA DVDs, or VIDEO CDs, you can select the sound from either the right or left channel and listen to the sound of the selected channel through both the right and left speakers. For example, when playing a disc containing a song with the vocals on the right channel and the instruments on the left channel, you can hear the instruments from both speakers by selecting the left channel.
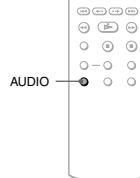
AUDIO

1 Press AUDIO during playback.

The following display appears.

1:ENGLISH DOLBY DIGITAL 3/2.1
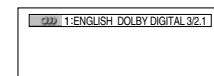
2 Press AUDIO repeatedly to select the desired audio signal.

42

◆ **When playing a DVD VIDEO**
Depending on the DVD VIDEO, the choice of language varies.
When 4 digits are displayed, they indicate a language code. See "Language Code List" on page 73 to see which language the code represents. When the same language is displayed two or more times, the DVD VIDEO is recorded in multiple audio formats.

◆ **When playing a DVD-RW**
The types of sound tracks recorded on a disc are displayed. The default setting is underlined.
Example:
- 1: MAIN (main sound)
- 1: SUB (sub sound)
- 1: MAIN+SUB (main and sub sound)

◆ **When playing a VIDEO CD, CD, or DATA CD/DATA DVD (MP3 audio)**
The default setting is underlined.
- STEREO: the standard stereo sound
- 1/L: the sound of the left channel (monaural)
- 2/R: the sound of the right channel (monaural)

◆ **When playing a Super VCD**
The default setting is underlined.
- 1:STEREO: the stereo sound of the audio track 1
- 1:1/L: the sound of the left channel of the audio track 1 (monaural)
- 1:2/R: the sound of the right channel of the audio track 1 (monaural)
- 2:STEREO: the stereo sound of the audio track 2
- 2:1/L: the sound of the left channel of the audio track 2 (monaural)
- 2:2/R: the sound of the right channel of the audio track 2 (monaural)

Note
While playing a Super VCD on which the audio track 2 is not recorded, no sound will come out when you select "2:STEREO," "2:1/L," or "2:2/R."

Checking the audio signal format DVD-V

You can check the audio signal format by pressing AUDIO repeatedly during playback. The format of the current audio signal (Dolby Digital, DTS, PCM, etc.) appears as shown below.

Example:
Dolby Digital 5.1 ch

Rear (L/R)

1:ENGLISH DOLBY DIGITAL 3 / 2 . 1

Front (L/R) + Center   LFE (Low Frequency Effect)

Example:
Dolby Digital 3 ch

2:SPANISH DOLBY DIGITAL 2 / 1

Front (L/R)   Rear (Monaural)

About audio signals

Audio signals recorded in a disc contain the sound elements (channels) shown below. Each channel is output from a separate speaker.
• Front (L)
• Front (R)
• Center
• Rear (L)
• Rear (R)
• Rear (Monaural): This signal can be either the Dolby Surround Sound processed signals or the Dolby Digital sound's monaural rear audio signals.
• LFE (Low Frequency Effect) signal

Note

If "DTS" is set to "OFF" in "AUDIO SETUP" (page 66) the DTS track selection option will not appear on the screen even if the disc contains DTS tracks.

TV Virtual Surround Settings (TVS) DVD-V

When you connect a stereo TV or 2 front speakers, TVS (TV Virtual Surround) lets you enjoy surround sound effects by using sound imaging to create virtual rear speakers from the sound of the front speakers (L: left, R: right) without using actual rear speakers. TVS was developed by Sony to produce surround sound for home use using just a stereo TV.

This only works when playing a multichannel Dolby audio sound track. Furthermore, if the player is set up to output the signal from the DIGITAL OUT (OPTICAL or COAXIAL) jack, the surround effect will be heard only when "DOLBY DIGITAL" is set to "D-PCM" in "AUDIO SETUP"(page 65).

DISPLAY

1 Press DISPLAY twice during playback.
The Control Menu appears.

2 Press ↑/↓ to select [ ] (TVS), then press ENTER.
The options for "TVS" appear.

DVD VIDEO

OFF
OFF
TVS DYNAMIC THEATER
TVS DYNAMIC
TVS WIDE
TVS NIGHT
TVS STANDARD

3 Press ↑/↓ to select one of the TVS modes, the press ENTER.

See the explanations given for each item in the following section.
• TVS DYNAMIC THEATER
• TVS DYNAMIC
• TVS WIDE
• TVS NIGHT
• TVS STANDARD

To cancel the setting
Select "OFF" in step 2.

◆TVS DYNAMIC THEATER
Creates one set of LARGE virtual rear speakers and virtual subwoofer from the sound of the front speakers (L, R) without using actual rear speakers and subwoofer (shown below).
This mode is effective when the distance between the front L and R speakers is short, such as with built-in speakers on a stereo TV.

TV

◆TVS DYNAMIC
Creates one set of virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers (shown below). This mode is effective when the distance between the front L and R speakers is short, such as with built-in speakers on a stereo TV.

TV

◆TVS WIDE
Creates five sets of virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers (shown below). This mode is effective when the distance between the front L and R speakers is short, such as with built-in speakers on a stereo TV.

TV

44

◆TVS NIGHT
Large sounds, such as explosions, are suppressed, but the quieter sounds are unaffected. This feature is useful when you want to hear the dialog and enjoy the surround sound effects of "TVS WIDE" at low volume.

◆TVS STANDARD
Creates three sets of virtual rear speakers from the sound of the actual front speakers (L, R) as shown below. This mode is effective when you use 2 separate speakers.

L   R

L: Front speaker (left)
R: Front speaker (right)
[ ]: Virtual speaker

Notes
• When you select one of the TVS modes, turn off the surround setting of the connected TV or amplifier (receiver).
• Not all discs will respond to the "TVS NIGHT" function in the same way.
• When the playing signal does not contain a signal for the rear speakers, the surround effects cannot be heard.
• When you select one of the TVS modes, the player does not output the sound of center speaker.
• Make sure that your listening position is between and at an equal distance from your speakers, and that the speakers are located in similar surroundings.
• The TVS effects do not work when using the Fast Play or Slow Play functions, even though you can change the TVS modes.

Sound Adjustments

Enjoying Movies

Changing the Angles
DVD-V

If various angles (multi-angles) for a scene are recorded on the DVD VIDEO, " " appears in the front panel display. This means that you can change the viewing angle.

ANGLE

1 Press ANGLE during playback.
The number of the angle appears on the display.

2

2 Press ANGLE repeatedly to select an angle number.
The scene changes to the selected angle.

Note
Depending on the DVD VIDEO, you may not be able to change the angles even if multi-angles are recorded on the DVD VIDEO.

Displaying the Subtitles
DVD-V DVD-RW

If subtitles are recorded on the discs, you can change the subtitles or turn them on and off whenever you want while playing a DVD.

SUBTITLE

1 Press SUBTITLE during playback.
The following display appears.

1:ENGLISH

2 Press SUBTITLE repeatedly to select a setting.

◆ When playing a DVD VIDEO
Select the language.
Depending on the DVD VIDEO, the choice of language varies.
When 4 digits are displayed, they indicate a language code. See "Language Code List" on page 73 to see which language the code represents.

◆ When playing a DVD-RW
Select "ON."

To turn off the subtitles
Select "OFF" in step 2.

Notes
• Depending on the DVD VIDEO, you may not be able to change the subtitles even if multilingual subtitles are recorded on it. You also may not be able to turn them off.
• While playing a disc with subtitles, the subtitle may disappear when you press FAST PLAY or SLOW PLAY button.

45

Enjoying Movies

Adjusting the Playback Picture (CUSTOM PICTURE MODE)
DVD-V DVD-RW VCD DATA CD
DATA DVD

You can adjust the video signal of the DVD, VIDEO CD or DATA CD/DATA DVD in JPEG format from the player to obtain the picture quality you want. Choose the setting that best suits the program you are watching. When you select "MEMORY," you can make further adjustments to each element of the picture (color, brightness, etc.).

←/↑/↓/→   ENTER
RETURN   DISPLAY

1 Press DISPLAY twice during playback.
The following display appears.

2 Press ↑/↓ to select [ ] (CUSTOM PICTURE MODE), then press ENTER.
The options for "CUSTOM PICTURE MODE" appear.

DVD VIDEO

STANDARD
STANDARD
DYNAMIC 1
DYNAMIC 2
CINEMA 1
CINEMA 2
MEMORY ➔

46

3 Press ↑/↓ to select the setting you want.
The default setting is underlined.
• STANDARD: displays a standard picture.
• DYNAMIC 1: produces a bold dynamic picture by increasing the picture contrast and the color intensity.
• DYNAMIC 2: produces a more dynamic picture than DYNAMIC 1 by further increasing the picture contrast and color intensity.
• CINEMA 1: enhances details in dark areas by increasing the black level.
• CINEMA 2: white colors become brighter and black colors become richer, and the color contrast is increased.
• MEMORY: adjusts the picture in greater detail.

4 Press ENTER.
The selected setting takes effect.

Hint
When you watch a movie, "CINEMA 1" or "CINEMA 2" is recommended.

Adjusting the picture items in "MEMORY"

You can adjust each element of the picture individually.
• PICTURE: changes the contrast
• BRIGHTNESS: changes the overall brightness
• COLOR: makes the colors deeper or lighter
• HUE: changes the color balance

1 In step 3 of "Adjusting the Playback Picture," select "MEMORY" and press ENTER.
The "PICTURE" adjustment bar appears.

PICTURE   0

2 Press ←/→ to adjust the picture contrast.

To go the next or previous picture item without saving the current setting, press ↑/↓.

3 Press ENTER.

The adjustment is saved, and "BRIGHTNESS" adjustment bar appears.

4 Repeat step 2 and 3 to adjust "BRIGHTNESS," "COLOR," and "HUE."

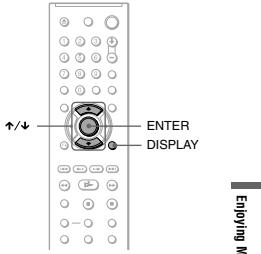**To turn off the display**
Press ⊙⤸ RETURN , or DISPLAY.

Note

The "BRIGHTNESS" setting is not effective if you connect the player via the LINE OUT (VIDEO) or S VIDEO OUT jack and select "PROGRESSIVE AUTO" or "PROGRESSIVE VIDEO" by using the PROGRESSIVE button on the front panel.

Sharpening the Pictures
(SHARPNESS) `DVD-V` `DVD-RW` `VCD`
`DATA CD` `DATA DVD`

You can enhance the outlines of images to produce a sharper picture.
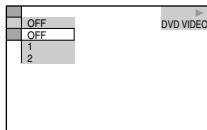
↑/↓ — ENTER
DISPLAY

Enjoying Movies

1 Press DISPLAY twice during playback.

The Control Menu appears.

2 Press ↑/↓ to select ⬚☐ (SHARPNESS), then press ENTER.

The options for "SHARPNESS" appear.

OFF	
OFF	DVD VIDEO
1	
2	

3 Press ↑/↓ to select a level.

• 1: enhances the outline.
• 2: enhances the outline more than 1.

4 Press ENTER.

The selected setting takes effect.

48

To cancel the "SHARPNESS" setting
Select "OFF" in step 3.

Note

This setting is not effective if you connect the player via the LINE OUT (VIDEO) or S VIDEO OUT jack, and select "PROGRESSIVE AUTO" or "PROGRESSIVE VIDEO" by using the PROGRESSIVE button on the front panel.

About MP3 Audio Tracks and JPEG Image Files

MP3 is audio compression technology that satisfies the ISO/IEC MPEG regulations. JPEG is image compression technology. You can play DATA CDs/DATA DVDs that contain MP3 audio tracks or JPEG image files.

DATA CDs/DATA DVDs that the player can play

You can play back DATA CDs (CD-ROMs/CD-Rs/CD-RWs) or DATA DVDs (DVD-ROMs/DVD+RWs/DVD+Rs/DVD-RWs/DVD-Rs) recorded in MP3 (MPEG-1 Audio Layer III) and JPEG format. However, the discs must be recorded according to ISO 9660 Level 1/Level 2 or Joliet, and DATA DVDs of Universal Disk Format (UDF).
Refer to the instructions supplied with the disc drives and the recording software (not supplied) for details on the recording format.

Note

The player may not be able to play some DATA CDs/DATA DVDs created in the Packet Write format.

MP3 audio track or JPEG image file that the player can play

The player can play the following tracks and files:
– MP3 audio tracks with the extension ".MP3."
– JPEG image files with the extension ".JPEG" or ".JPG."
– JPEG image files that conform to the DCF* image file format.
* "Design rule for Camera File system": Image standards for digital cameras regulated by JEITA (Japan Electronics and Information Technology Industries Association).

Notes
• The player will play any data with the extension ".MP3," ".JPG," or ".JPEG," even if they are not in MP3 or JPEG format. Playing these data may generate a loud noise which could damage your speaker system.
• The player does not conform to audio tracks in mp3PRO format.
• Some JPEG files cannot be played.

About playback order of albums, tracks, and files

Albums play in the following order:
◆ Structure of disc contents

Tree 1 Tree 2 Tree 3 Tree 4 Tree 5

ROO Ⓐ

Enjoying MP3 Audio and JPEG Images

Album   Track or file

50
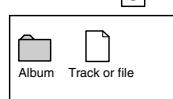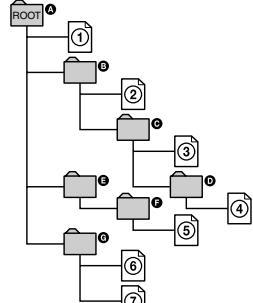
When you insert a DATA CD/DATA DVD and press ▷, the numbered tracks (or files) are played sequentially, from ① through ⑦. Any sub-albums/tracks (or files) contained within a currently selected album take priority over the next album in the same tree. (Example: Ⓒ contains Ⓓ so ④ is played before ⑤.)

When you press MENU and the list of album names appears (page 51), the album names are arranged in the following order:
Ⓐ → Ⓑ → Ⓒ → Ⓓ → Ⓕ → Ⓖ. Albums that do not contain tracks (or files) (such as album Ⓔ) do not appear in the list.

✿ Hints
• If you add numbers (01, 02, 03, etc.) to the front of the track/file names when you store the tracks (or files) in a disc, the tracks and files will be played in that order.
• Since a disc with many trees takes longer to start playback, it is recommended that you create albums with no more than two trees.

Notes
• Depending on the software you use to create the DATA CD/DATA DVD, the playback order may differ from the above illustration.
• The playback order above may not be applicable if there are more than 200 albums and 300 tracks/files in each album.
• The player can recognize up to 200 albums (the player will count just albums, including albums that do not contain MP3 audio tracks and JPEG image files). The player will not play any albums beyond the 200th album.
• Proceeding to the next or another album may take some time.

Playing MP3 Audio Tracks or JPEG Image Files `DATA CD` `DATA DVD`

You can play MP3 audio tracks and JPEG image files on DATA CDs (CD-ROMs/CD-Rs/CD-RWs) or DATA DVDs (DVD-ROMs/DVD+RWs/DVD+Rs/DVD-RWs/DVD-Rs).

CLEAR — PICTURE NAVI
— MENU
←/↑/↓/→ — ENTER
⤸ RETURN
|◀◀ — ▶▶|
▷
ZOOM — ■
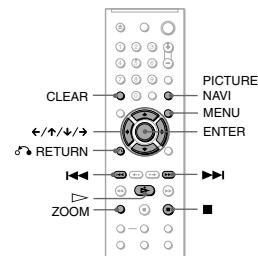
✿ Hint
You can view the disc information while playing MP3 audio tracks (page 39).

Notes
• DATA CDs recorded in KODAK Picture CD format automatically start playing when inserted.
• If no MP3 audio track or JPEG image file is recorded on the DATA CD/DATA DVD, "No audio data" or "No image data" appears on the screen.

Selecting an album

1 **Press MENU.**
The list of albums on the disc appears.
When an album is being played, its title is shaded.

```
     3( 30)
ROCK BEST HIT
KARAOKE
MY FAVOURITE SONG
R&B
JAZZ
CLASSIC
SALSA OF CUBA
BOSSA NOVA
```

2 **Press ↑/↓ to select the album you want to play.**

3 **Press ▷.**
Playback starts from the selected album.
To select MP3 audio tracks, see "Selecting an MP3 audio track" (page 51).
To select JPEG image files, see "Selecting a JPEG image file" (page 52).

To stop playback
Press ■.

To go to the next or previous page
Press → or ←.

To turn on or off the display
Press MENU repeatedly.

☼ Hint
Of the selected album, you can select to play only the MP3 audio tracks, JPEG image files, or both, by setting "MODE (MP3, JPEG)" (page 53).

Selecting an MP3 audio track

1 **After step 2 of "Selecting an album," press ENTER.**
The list of tracks in the album appears.

```
     MY FAVOURITE SONG
        1(256)

WALTZ FOR DEBBY
MY ROMANCE
MILES TONES
MY FUNNY VALENTINE
AUTUM LEAVES
ALL BLUES
SOMEDAY MY PRINCE W...
```

2 **Press ↑/↓ to select a track, and press ENTER.**
Playback starts from the selected track.

To stop playback
Press ■.

To go to the next or previous page
Press → or ←.

To return to the previous display
Press ♂ RETURN.

To go to the next or previous MP3 audio track
Press ►►I or I◄◄ during playback. You can select the first track of the next album by pressing ►►I during playback of the last track of the current album.
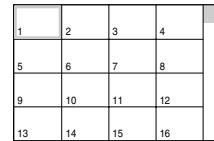Note that you cannot return to the previous album by using I◄◄ , and that you need to select the previous album from the album list.

Selecting a JPEG image file

1 **After step 2 of "Selecting an album," press PICTURE NAVI.**
The image files in the album appear in 16 subscreens. A scroll box is displayed on the right.

```
 1    2    3    4
 5    6    7    8
 9    10   11   12
 13   14   15   16
```

To display the additional image, select the bottom images and press ↓. To return to the previous image, select the top images and press ↑.

2 **Press ←/↑/↓/→ to select the image you want to view, and press ENTER.**
The selected image appears.
Example

To go to the next or previous JPEG image file
Press ← or → during playback. You can select the first file of the next album by pressing → during playback of the last file of the current album.
Note that you cannot return to the previous album by using ←, and that you need to select the previous album from the album list.

To rotate a JPEG image
Press ↑/↓ while viewing the image. Each time you press ↑, the image rotates counterclockwise by 90 degrees.
To return to normal view, press CLEAR. Note that the view also returns to normal if you press ←/→ to go to the next or previous image.
Example: when ↑ is pressed once.

Rotating direction

To magnify a JPEG image (ZOOM)
Press ZOOM while viewing the image. You can enlarge the image up to four times the original size, and scroll using ←/↑/↓/→.
To return to normal view, press CLEAR.

◆When pressed once (x2)
The image enlarges twice the original size.

◆When pressed twice (x4)
The image enlarges four times the original size.

To stop viewing the JPEG image
Press ■.

☼ Hints
• While viewing JPEG image files, you can set options such as "INTERVAL" (page 54), "EFFECT" (page 55), and "SHARPNESS" (page 47).
• You can view JPEG images files without MP3 audio by setting "MODE (MP3, JPEG)" to "IMAGE (JPEG)" (page 53).
• The date the picture was taken is displayed beside "DATE" in the Control Menu (page 13). Note that no date may appear depending on the digital camera.

Note
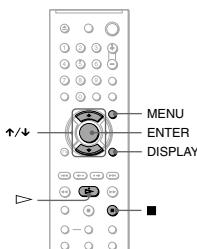PICTURE NAVI does not work if "AUDIO (MP3)" is selected in "MODE (MP3, JPEG)" (page 53).

Enjoying JPEG Images as a Slide Show

DATA CD **DATA DVD**

You can play JPEG image files on a DATA CD or DATA DVD successively as a slide show.

MENU
↑/↓
ENTER
DISPLAY
▷   ■

1 **Press MENU.**
The list of albums on the DATA CD/ DATA DVD appears.

```
     3( 30)
ROCK BEST HIT
KARAOKE
MY FAVOURITE SONG
R&B
JAZZ
CLASSIC
SALSA OF CUBA
BOSSA NOVA
```

2 **Press ↑/↓ to select an album.**

3 **Press ▷.**
The JPEG images in the selected album start playing as a slide show.

To stop playback
Press ■.

Notes
• The slide show stops when ↑/↓ or ZOOM is pressed. To resume the slide show, press ▷.
• This function does not work if "MODE (MP3, JPEG)" is set to "AUDIO (MP3)" (page 53).

Viewing a slide show with sound (MODE (MP3, JPEG))

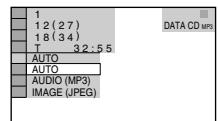When JPEG image files and MP3 audio tracks are placed in the same album, you can enjoy a slide show with sound.

1 **Press DISPLAY during stop mode.**
The Control Menu appears.

2 **Press ↑/↓ to select (MODE (MP3, JPEG)), and press ENTER.**
The options for "MODE (MP3, JPEG)" appear.

```
1
12(27)
18(34)
T    32:55        DATA CD MP3
AUTO
AUTO
AUDIO (MP3)
IMAGE (JPEG)
```

3 **Press ↑/↓ to select "AUTO" (default), and press ENTER.**
• AUTO: plays both the JPEG image files and MP3 audio tracks in the same album as a slide show.
• AUDIO (MP3): plays only MP3 audio tracks continuously.
• IMAGE (JPEG): plays only JPEG image files continuously.

4 **Press MENU.**
The list of albums on the DATA CD/ DATA DVD appears.

```
     3( 30)
ROCK BEST HIT
KARAOKE
MY FAVOURITE SONG
R&B
JAZZ
CLASSIC
SALSA OF CUBA
BOSSA NOVA
```

5 **Press ↑/↓ to select the album that contains both the MP3 audio tracks and JPEG images you want to play.**

6 **Press ▷.**
A slide show starts with sound.

☼ Hints
• To repeat both MP3 audio tracks and JPEG image files in a single album, repeat the same MP3 audio track or album when "MODE (MP3, JPEG)" is set to "AUTO." See "Playing repeatedly (Repeat Play)" (page 33) to repeat the track or album.
• The player recognizes a maximum of 200 albums regardless of the selected mode. Of each album, the player recognizes up to 300 MP3 audio tracks and 300 JPEG image files when "AUTO" is selected, 600 MP3 audio tracks when "AUDIO (MP3)" is selected, 600 JPEG image files when "IMAGE (JPEG)" is selected.

Notes
• This function does not work if the MP3 audio tracks and JPEG image files are not placed in the same album.
• If playing time of JPEG image or MP3 audio is longer than the other, the longer one continues without sound or image.
• If you play large MP3 track data and JPEG image data at the same time, the sound may skip. It is recommended that you set the MP3 bit rate to 128 kbps or lower when creating the file. If the sound still skips, then reduce the size of the JPEG file.
• The player skips to the next disc if the current disc contains MP3 audio tracks only and "MODE (MP3, JPEG)" is set to "IMAGE (JPEG)," or the disc contains JPEG image files only and "MODE (MP3, JPEG)" is set to "AUDIO (MP3)." It is recommended that you set "MODE (MP3, JPEG)" to "AUTO."

Setting the pace for a slide show (INTERVAL)

You can set the time the slides are displayed on the screen.

1 **Press DISPLAY twice while viewing a JPEG image or when the player is in stop mode.**
The Control Menu appears.

2 **Press ↑/↓ to select (INTERVAL), then press ENTER.**
The options for "INTERVAL" appear.

```
     3( 12)
1(   4)
10/29/2005        DATA CD JPEG
NORMAL
NORMAL
FAST
SLOW 1
SLOW 2
```
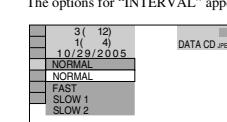
3 **Press ↑/↓ to select a setting.**
The default setting is underlined.
• NORMAL: sets the duration to between 6 to 9 seconds.
• FAST: sets a duration shorter than NORMAL.
• SLOW 1: sets a duration longer than NORMAL.
• SLOW 2: sets a duration longer than SLOW 1.

4 **Press ENTER.**

Note
Some JPEG files, especially progressive JPEG files or JPEG files of 3,000,000 pixels or more, may take longer to display than others, which may make the duration seem longer than the setting you selected.

(side tab) Enjoying MP3 Audio and JPEG Images

Selecting the slides' appearance (EFFECT)

You can select the way the slides are displayed during a slide show.

1 Press DISPLAY twice while viewing a JPEG image or when the player is in stop mode.

2 Press ↑/↓ to select ▣ (EFFECT), then press ENTER.
The options for "EFFECT" appear.

```
        3 ( 12)
        1 (   4)
10/23/2005            DATA CD JPEG

        MODE 1
        MODE 1
        MODE 2
        MODE 3
        MODE 4
        MODE 5
        OFF
```

3 Press ↑/↓ to select a setting.
The default setting is underlined.
• MODE 1: the image sweeps in from top to bottom.
• MODE 2: the image sweeps in from left to right.
• MODE 3: the image stretches out from the center of the screen.
• MODE 4: the images randomly cycle through the effects.
• MODE 5: the next image slides over the previous image.
• OFF: turns off this function.

4 Press ENTER.

Enjoying MP3 Audio and JPEG Images

55

To turn off the Custom Parental Control function

1 Follow steps 1 to 3 of "Custom Parental Control."

2 Press ↑/↓ to select "OFF →," then press ENTER.

3 Enter your 4-digit password using the number buttons, then press ENTER.

To play a disc for which Custom Parental Control is set

1 Insert the disc for which Custom Parental Control is set.
The "CUSTOM PARENTAL CONTROL" display appears.

```
CUSTOM PARENTAL CONTROL

Custom parental control is already
set. To play, enter your password
and press ENTER.

 ▢    ▢    ▢    ▢
```

2 Enter your 4-digit password using the number buttons, then press ENTER.
The player is ready for playback.

Hint
If you forget your password, enter the 6-digit number "199703" using the number buttons when the "CUSTOM PARENTAL CONTROL" display asks you for your password, then press ENTER. The display will ask you to enter a new 4-digit password.

Using Various Additional Functions

Locking Discs (CUSTOM PARENTAL CONTROL, PARENTAL CONTROL)

You can set two kinds of playback restrictions for a disc.
• Custom Parental Control
You can set playback restrictions so that the player will not play inappropriate discs.
• Parental Control
Playback of some DVD VIDEOs can be limited according to a predetermined level such as the age of the users. Scenes may be blocked or replaced with different scenes.
The same password is used for both Parental Control and Custom Parental Control.

Number buttons

↑/↓

ENTER
DISPLAY

■

Custom Parental Control
DVD-V VCD CD

You can set the same Custom Parental Control password for up to 40 discs. When you set the 41st-disc, the first disc is canceled.

1 Insert the disc you want to lock.
If the disc is playing, press ■ to stop playback.

2 Press DISPLAY while the player is in stop mode.
The Control Menu appears.

56

---

3 Press ↑/↓ to select ▣ (PARENTAL CONTROL), then press ENTER.
The options for "PARENTAL CONTROL" appear.

```
1
1 2 ( 2 7 )
1 8 ( 3 4 )              DVD VIDEO
T    1 : 3 2 : 5 5

ON →
PLAYER →
PASSWORD →
OFF
```

4 Press ↑/↓ to select "ON →," then press ENTER.

◆ **If you have not entered a password**
The display for registering a new password appears.

```
PARENTAL CONTROL

Enter a new 4-digit password,
then press ENTER.

 ▢    ▢    ▢    ▢
```

Enter a 4-digit password using the number buttons, then press ENTER.
The display for confirming the password appears.

◆ **When you have already registered a password**
The display for entering the password appears.

5 Enter or re-enter your 4-digit password using the number buttons, then press ENTER.
"Custom parental control is set." appears and then the screen returns to the Control Menu.

Parental Control (limited playback) DVD-V

Playback of some DVD VIDEOs can be limited according to a predetermined level such as the age of the users. The "PARENTAL CONTROL" function allows you to set a playback limitation level.

1 Press DISPLAY while the player is in stop mode.
The Control Menu appears.

2 Press ↑/↓ to select ▣ (PARENTAL CONTROL), then press ENTER.
The options for "PARENTAL CONTROL" appear.

```
1
1 2 ( 2 7 )
1 8 ( 3 4 )              DVD VIDEO
T    1 : 3 2 : 5 5

ON →
PLAYER →
PASSWORD →
OFF
```

3 Press ↑/↓ to select "PLAYER →," then press ENTER.

◆ **If you have not entered a password**
The display for registering a new password appears.

```
PARENTAL CONTROL

Enter a new 4-digit password,
then press ENTER.

 ▢    ▢    ▢    ▢
```

Enter a 4-digit password using the number buttons, then press ENTER.
The display for confirming the password appears.

◆ **When you have already registered a password**
The display for entering the password appears.

Using Various Additional Functions

---

4 Enter or re-enter your 4-digit password using the number buttons, then press ENTER.
The display for setting the playback limitation level appears.

```
PARENTAL CONTROL
LEVEL:                    OFF
STANDARD:                 USA
```

5 Press ↑/↓ to select "STANDARD," then press ENTER.
The selection items for "STANDARD" are displayed.

```
PARENTAL CONTROL
LEVEL:                    OFF
STANDARD:                 USA
                          USA
                         OTHERS→
```

6 Press ↑/↓ to select a geographic area as the playback limitation level, then press ENTER.
The area is selected.
When you select "OTHERS →," select and enter a standard code in the table on page 73 using the number buttons.

7 Press ↑/↓ to select "LEVEL," then press ENTER.
The selection items for "LEVEL" are displayed.

```
PARENTAL CONTROL
LEVEL:                    OFF
STANDARD:                 OFF
                      8:
                      7:  NC17
                      6:  R
                      5:
                          ▼
```

58

---

8 Select the level you want using ↑/↓, then press ENTER.
Parental Control setting is complete.

```
PARENTAL CONTROL
LEVEL:              4:  PG13
STANDARD:               USA
```

The lower the value, the stricter the limitation.

To turn off the Parental Control function
Set "LEVEL" to "OFF" in step 8.

To play a disc for which Parental Control is set

1 Insert the disc and press ▷.
The display for entering your password appears.

2 Enter your 4-digit password using the number buttons, then press ENTER.
The player starts playback.

Hint
If you forget your password, remove the disc and repeat steps 1 to 3 of "Parental Control (limited playback)." When you are asked to enter your password, enter "199703" using the number buttons, then press ENTER. The display will ask you to enter a new 4-digit password. After you enter a new 4-digit password, replace the disc in the player and press ▷. When the display for entering your password appears, enter your new password.

Notes
• When you play discs which do not have the Parental Control function, playback cannot be limited on this player.
• Depending on the disc, you may be asked to change the parental control level while playing the disc. In this case, enter your password, then change the level. If the Resume Play mode is canceled, the level returns to the previous level.

Changing the password

1 **Press DISPLAY while the player is in stop mode.**
The Control Menu appears.

2 **Press ↑/↓ to select** ▭ **(PARENTAL CONTROL), then press ENTER.**
The options for "PARENTAL CONTROL" appear.

3 **Press ↑/↓ to select "PASSWORD →," then press ENTER.**
The display for entering the password appears.

4 **Enter your 4-digit password using the number buttons, then press ENTER.**

5 **Enter a new 4-digit password using the number buttons, then press ENTER.**

6 **To confirm your password, re-enter it using the number buttons, then press ENTER.**

If you make a mistake entering your password
Press ← before you press ENTER and input the correct number.

Controlling Your TV with the Supplied Remote

You can control the sound level, input source, and power switch of your Sony TV with the supplied remote.

TV I/⏻

Number buttons

VOL +/–
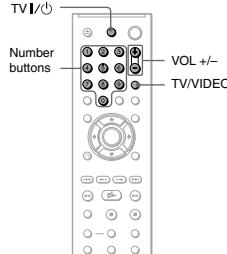
TV/VIDEO

You can control your TV using the buttons below.

By pressing	You can
TV I/⏻	Turns the TV on or off
VOL +/–	Adjusts the volume of the TV
TV/VIDEO	Switches the TV's input source between the TV and other input sources

Note

Depending on the connected unit, you may not be able to control your TV using all or some of the buttons on the supplied remote.

Using Various Additional Functions

Controlling other TVs with the remote

You can control the sound level, input source, and power switch of non-Sony TVs as well. If your TV is listed in the table below, set the appropriate manufacturer's code.

1 **While holding down TV I/⏻, press the number buttons to select your TV's manufacturer's code (see the table below).**

2 **Release TV I/⏻.**

Code numbers of controllable TVs
If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.

Manufacturer	Code number
Sony	01 (default)
Daewoo	04, 22
Hitachi	02, 04
JVC	09
LG/Goldstar	04
MGA/Mitsubishi	04, 13
Panasonic	19
Philips	21
RCA	04, 10
Samsung	04, 20
Sharp	18
Toshiba	07, 18

Notes

• When you replace the batteries of the remote, the code number you have set may be reset to the default setting. Set the appropriate code number again.
• Depending on the connected unit, you may not be able to control your TV using all or some of the buttons on the supplied remote.

60

Settings and Adjustments

Using the Setup Display

By using the Setup Display, you can make various adjustments to items such as picture and sound. You can also set a language for the subtitles and the Setup Display, among other things.
For details on each Setup Display item, see pages from 62 to 66.

Note

Playback settings stored in the disc take priority over the Setup Display settings and not all of the functions described may work.

↑/↓
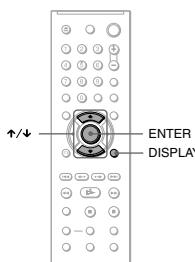
ENTER
DISPLAY

1 **Press DISPLAY when the player is in stop mode.**
The Control Menu appears.

2 **Press ↑/↓ to select** ▭ **(SETUP), then press ENTER.**
The options for "SETUP" appear.

```
1
( 5)                          DVD VIDEO



        QUICK
        CUSTOM
        RESET
        QUICK
```
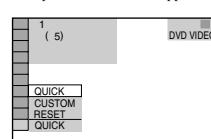
3 **Press ↑/↓ to select "CUSTOM," then press ENTER.**
The Setup Display appears.

```
LANGUAGE SETUP
OSD:              ENGLISH
MENU:             ENGLISH
AUDIO:            ORIGINAL
SUBTITLE:         ENGLISH
```
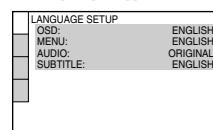
4 **Press ↑/↓ to select the setup item from the displayed list: "LANGUAGE SETUP," "SCREEN SETUP," "CUSTOM SETUP," or "AUDIO SETUP." Then press ENTER.**
The Setup item is selected.
Example: "SCREEN SETUP"

Selected item

```
SCREEN SETUP
TV TYPE:               4:3 LETTER BOX
SCREEN SAVER:          ON
BACKGROUND:            JACKET PICTURE
BLACK LEVEL:           ON
BLACK LEVEL (COMPONENT OUT):  OFF
4:3 OUTPUT:            FULL
```

Setup items
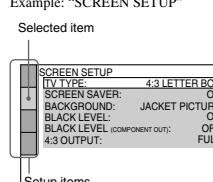
5 **Press ↑/↓ to select an item, then press ENTER.**
The options for the selected item appear.
Example: "TV TYPE"

```
SCREEN SETUP
TV TYPE:               4:3 LETTER BOX
SCREEN SAVER:          4:3 LETTER BOX
BACKGROUND:            4:3 PAN SCAN
BLACK LEVEL:           16:9
BLACK LEVEL (COMPONENT OUT):  OFF
4:3 OUTPUT:            FULL
```
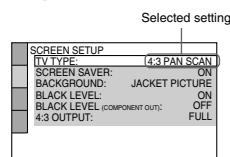
Options

Settings and Adjustments
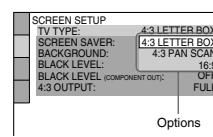
6 **Press ↑/↓ to select a setting, then press ENTER.**
The setting is selected and setup is complete.
Example: "4:3 PAN SCAN"

Selected setting

```
SCREEN SETUP
TV TYPE:              4:3 PAN SCAN
SCREEN SAVER:         ON
BACKGROUND:           JACKET PICTURE
BLACK LEVEL:          ON
BLACK LEVEL (COMPONENT OUT):  OFF
4:3 OUTPUT:           FULL
```

To enter the Quick Setup mode
Select "QUICK" in step 3. Follow from step 5 of the Quick Setup explanation to make basic adjustments (page 22).

To reset all of the "SETUP" settings
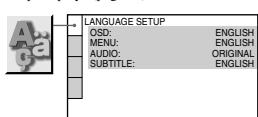
1 Select "RESET" in step 3 and press ENTER.

2 Select "YES" using ↑/↓.
You can also quit the process and return to the Control Menu by selecting "NO" here.

3 Press ENTER.
All the settings explained on pages 62 to 66 return to the default settings. Do not press I/⏻ while resetting the player, which takes a few seconds to complete.

Setting the Display or Sound Track Language
(LANGUAGE SETUP)

"LANGUAGE SETUP" allows you to set various languages for the on-screen display or sound track.

Select "LANGUAGE SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 61).

```
LANGUAGE SETUP
OSD:              ENGLISH
MENU:             ENGLISH
AUDIO:            ORIGINAL
SUBTITLE:         ENGLISH
```

◆ **OSD (On-Screen Display)**
Switches the display language on the screen.

◆ **MENU (DVD VIDEO only)**
You can select the desired language for the disc's menu.

◆ **AUDIO (DVD VIDEO only)**
Switches the language of the sound track.
When you select "ORIGINAL," the language given priority in the disc is selected.

◆ **SUBTITLE (DVD VIDEO only)**
Switches the language of the subtitle recorded on the DVD VIDEO.
When you select "AUDIO FOLLOW," the language for the subtitles changes according to the language you selected for the sound track.

Hint
If you select "OTHERS →" in "MENU," "SUBTITLE," or "AUDIO," select and enter a language code from "Language Code List" on page 73 using the number buttons.

Note
If you select a language in "MENU," "SUBTITLE," or "AUDIO" that is not recorded on a DVD VIDEO, one of the recorded languages will be automatically selected.
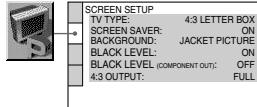
62

Settings for the Display

(SCREEN SETUP)

Choose settings according to the TV to be connected.

Select "SCREEN SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 61).
The default settings are underlined.

```
SCREEN SETUP
TV TYPE:                    4:3 LETTER BOX
SCREEN SAVER:               ON
BACKGROUND:                 JACKET PICTURE
BLACK LEVEL:                ON
BLACK LEVEL (COMPONENT OUT):  OFF
4:3 OUTPUT:                 FULL
```

◆ TV TYPE

Selects the aspect ratio of the connected TV (4:3 standard or wide).

4:3 LETTER BOX	Select this when you connect a 4:3 screen TV. Displays a wide picture with bands on the upper and lower portions of the screen.
4:3 PAN SCAN	Select this when you connect a 4:3 screen TV. Automatically displays the wide picture on the entire screen and cuts off the portions that do not fit.
16:9	Select this when you connect a wide-screen TV or a TV with a wide mode function.

4:3 LETTER BOX

4:3 PAN SCAN

16:9

Note

Depending on the DVD, "4:3 LETTER BOX" may be selected automatically instead of "4:3 PAN SCAN" or vice versa.

◆ SCREEN SAVER

The screen saver image appears when you leave the player in pause or stop mode for 15 minutes, or when you play a CD, or DATA CD/DATA DVD (MP3 audio) for more than 15 minutes. The screen saver will help prevent your display device from becoming damaged (ghosting). Press ▷ to turn off the screen saver.

ON	Turns on the screen saver.
OFF	Turns off the screen saver.

◆ BACKGROUND

Selects the background color or picture on the TV screen when the player is in stop mode or while playing a CD or DATA CD/DATA DVD (MP3 audio).

JACKET PICTURE	The jacket picture (still picture) appears, but only when the jacket picture is already recorded on the disc (CD-EXTRA, etc.). If the disc does not contain a jacket picture, the "GRAPHICS" picture appears.
GRAPHICS	A preset picture stored in the player appears.
BLUE	The background color is blue.
BLACK	The background color is black.

◆ BLACK LEVEL

Selects the black level (setup level) for the video signals output from the jacks other than COMPONENT VIDEO OUT.

ON	Sets the black level of the output signal to the standard level.
OFF	Lowers the standard black level. Use this when the picture becomes too white.

◆ BLACK LEVEL (COMPONENT OUT)

Selects the black level (setup level) for the video signals output from the COMPONENT VIDEO OUT jacks. You cannot select this when the player outputs progressive signals (page 19).

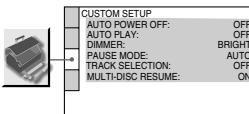| OFF	Sets the black level of the output signal to the standard level. Normally select this position.
ON	Raises the standard black level. Use this setting when the picture appears too dark.

◆ 4:3 OUTPUT

This setting is effective only when you set "TV TYPE" in "SCREEN SETUP" to "16:9". Adjust this to watch 4:3 aspect ratio progressive signals. If you can change the aspect ratio on your progressive format (480p) compatible TV, change the setting on your TV, not the player. This setting is effective only when "PROGRESSIVE AUTO" or "PROGRESSIVE VIDEO" is selected by using the PROGRESSIVE button on the front panel.

FULL	Select this when you can change the aspect ratio on your TV.
NORMAL	Select this when you cannot change the aspect ratio on your TV. Shows a 16:9 aspect ratio signal with black bands on left and right sides of the image.

16:9 aspect ratio TV

64

Custom Settings (CUSTOM SETUP)

Use this to set up playback related and other settings.

Select "CUSTOM SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 61).
The default settings are underlined.

```
CUSTOM SETUP
AUTO POWER OFF:        OFF
AUTO PLAY:             OFF
DIMMER:                BRIGHT
PAUSE MODE:            AUTO
TRACK SELECTION:       OFF
MULTI-DISC RESUME:     ON
```

◆ AUTO POWER OFF

Switches the Auto Power Off setting on or off.

OFF	Switches this function off.
ON	The player enters standby mode when left in stop mode for more than 30 minutes.

◆ AUTO PLAY

Switches the Auto Play setting on or off. This function is useful when the player is connected to a timer (not supplied).

OFF	Switches this function off.
ON	Automatically starts playback when the player is turned on by a timer (not supplied).

◆ DIMMER

Adjusts the lighting of the front panel display.

BRIGHT	Makes the lighting bright.
DARK	Makes the lighting dark.

Settings and Adjustments

◆ PAUSE MODE (DVD VIDEO/DVD-RW only)

Selects the picture in pause mode.

AUTO	The picture, including subjects that move dynamically, is output with no jitter. Normally select this position.
FRAME	The picture, including subjects that do not move dynamically, is output in high resolution.

◆ TRACK SELECTION (DVD VIDEO only)

Gives the sound track which contains the highest number of channels priority when you play a DVD VIDEO on which multiple audio formats (PCM, DTS, or Dolby Digital format) are recorded.

OFF	No priority given.
AUTO	Priority given.

Notes

• When you set the item to "AUTO," the language may change. The "TRACK SELECTION" setting has higher priority than the "AUDIO" settings in "LANGUAGE SETUP" (page 62).
• If you set "DTS" to "OFF" (page 66), the DTS sound track is not played even if you set "TRACK SELECTION" to "AUTO."
• If PCM, DTS, and Dolby Digital sound tracks have the same number of channels, the player selects PCM, DTS, and Dolby Digital sound tracks in this order.

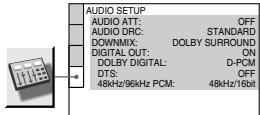### ◆ MULTI-DISC RESUME (DVD VIDEO/VIDEO CD only)

Switches the Multi-disc Resume setting on or off. Resume playback can be stored in memory for up to 6 different DVD VIDEOs/VIDEO CDs discs (page 27).

ON	Stores the resume setting in memory for up to six discs.
OFF	Does not store the resume setting in memory. Playback restarts at the resume point only for the current disc in the player.

Settings for the Sound

(AUDIO SETUP)

"AUDIO SETUP" allows you to set the sound according to the playback and connection conditions.

Select "AUDIO SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 61).
The default settings are underlined.

```
AUDIO SETUP
AUDIO ATT:              OFF
AUDIO DRC:              STANDARD
DOWNMIX:                DOLBY SURROUND
DIGITAL OUT:            ON
  DOLBY DIGITAL:        D-PCM
  DTS:                  OFF
  48kHz/96kHz PCM:      48kHz/16bit
```

◆ AUDIO ATT (attenuation)

If the playback sound is distorted, set this item to "ON." The player reduces the audio output level.
This function affects the output of the LINE OUT L/R (AUDIO) jacks.

OFF	Normally, select this position.
ON	Select this when the playback sound from the speakers is distorted.

◆ AUDIO DRC (Dynamic Range Control) (DVD VIDEO/DVD-RW only)

Makes the sound clear when the volume is turned down when playing a DVD that conforms to "AUDIO DRC."
This function affects the output from the following jacks:
– LINE OUT L/R (AUDIO) jacks
– DIGITAL OUT (OPTICAL or COAXIAL) jack only when "DOLBY DIGITAL" is set to "D-PCM" (page 66).

STANDARD	Normally select this position.
TV MODE	Makes low sounds clear even if you turn the volume down.
WIDE RANGE	Gives you the feeling of being at a live performance.

◆ DOWNMIX (DVD VIDEO/DVD-RW only)

Switches the method for mixing down to 2 channels when you play a DVD which has rear sound elements (channels) or is recorded in Dolby Digital format. For details on the rear signal components, see "Checking the audio signal format" (page 43). This function affects the output of the following jacks:
– LINE OUT L/R (AUDIO) jacks
– DIGITAL OUT (OPTICAL or COAXIAL) jack when "DOLBY DIGITAL" is set to "D-PCM" (page 66).

DOLBY SUR-ROUND	Normally, select this position. Multi-channel audio signals are output to 2 channels for enjoying surround sounds.
NORMAL	Multi-channel audio signals are downmixed to 2 channels for use with your stereo.

◆ DIGITAL OUT

Selects if audio signals are output via the DIGITAL OUT (OPTICAL or COAXIAL) jack.

ON	Normally select this position. When you select "ON," see "Setting the digital output signal" for further settings.
OFF	The influence of the digital circuit upon the analog circuit is minimal.

Setting the digital output signal

Switches the method of outputting audio signals when you connect a component such as an amplifier (receiver) or MD deck with a digital input jack.
For connection details, see page 20.
Select "DOLBY DIGITAL," "DTS," and "48kHz/96kHz PCM" after setting "DIGITAL OUT" to "ON."
If you connect a component that is incompatible with the selected audio signal, a loud noise (or no sound) may be heard from the speakers, risking damage to your ears or speakers.

66

◆ DOLBY DIGITAL (DVD VIDEO/DVD-RW only)

Selects the type of Dolby Digital signal.

D-PCM	Select this when the player is connected to an audio component without a built-in Dolby Digital decoder. You can select whether the signals conform to Dolby Surround (Pro Logic) or not by making adjustments to the "DOWNMIX" item in "AUDIO SETUP" (page 66).
DOLBY DIGITAL	Select this when the player is connected to an audio component with a built-in Dolby Digital decoder.

◆ DTS

Selects whether or not to output DTS signals.

OFF	Select this when the player is connected to an audio component without a built-in DTS decoder.
ON	Select this when the player is connected to an audio component with a built-in DTS decoder.

◆ 48kHz/96kHz PCM (DVD VIDEO only)

Selects the sampling frequency of the audio signal.

48kHz/16bit	The audio signals of DVD VIDEOs are always converted to 48kHz/16bit.
96kHz/24bit	All types of signals including 96kHz/24bit are output in their original format. However, if the signal is encrypted for copyright protection purposes, the signal is only output as 48kHz/16bit.

Note

The analogue audio signals from the LINE OUT L/R (AUDIO) jacks are not affected by this setting and keep their original sampling frequency level.

Additional Information

Troubleshooting

If you experience any of the following difficulties while using the player, use this troubleshooting guide to help remedy the problem before requesting repairs. Should any problem persist, consult your nearest Sony dealer (For customers in the USA only).

Power

The power is not turned on.
➝ Check that the power cord is connected securely.

Picture

There is no picture/picture noise appears.
➝ Re-connect the connecting cord securely.
➝ The connecting cords are damaged.
➝ Check the connection to your TV (page 17) and switch the input selector on your TV so that the signal from the player appears on the TV screen.
➝ The disc is dirty or flawed.
➝ If the picture output from your player goes through your VCR to get to your TV or if you are connected to a combination TV/VIDEO player, the copy-protection signal applied to some DVD programs could affect picture quality. If you still experience problems even when you connect your player directly to your TV, try connecting your player to your TV's S VIDEO input (page 17).
➝ You have selected "PROGRESSIVE AUTO" or "PROGRESSIVE VIDEO" using the PROGRESSIVE button on the front panel (the PROGRESSIVE indicator lights up) even though your TV cannot accept the progressive signal. In this case, select "NORMAL (INTERLACE)" so that the PROGRESSIVE indicator turns off.

➝ Even if your TV is compatible with progressive format 480p signals, the image may be affected when you set the player to progressive format. In this case, select "NORMAL (INTERLACE)" using the PROGRESSIVE button on the front panel so that the PROGRESSIVE indicator turns off and the player is set to normal (interlace) format.

The picture does not fill the screen, even though the aspect ratio is set in "TV TYPE" under "SCREEN SETUP."
➝ The aspect ratio of the disc is fixed on your DVD.

Sound

There is no sound.
➝ Re-connect the connecting cord securely.
➝ The connecting cord is damaged.
➝ The player is connected to the wrong input jack on the amplifier (receiver) (page 17).
➝ The amplifier (receiver) input is not correctly set.
➝ The player is in pause mode or in Slow-motion Play mode.
➝ The player is in fast forward or fast reverse mode.
➝ If the audio signal does not come through the DIGITAL OUT (OPTICAL or COAXIAL) jack, check the audio settings (page 66).
➝ While playing a Super VCD on which the audio track 2 is not recorded, no sound will come out when you select "2:STEREO," "2:1/L," or "2:2/R."

Sound distortion occurs.
➝ Set "AUDIO ATT" in "AUDIO SETUP" to "ON" (page 65).

The sound volume is low.
➝ The sound volume is low on some DVDs. The sound volume may improve if you set "AUDIO DRC" in "AUDIO SETUP" to "TV MODE" (page 65).
➝ Set "AUDIO ATT" in "AUDIO SETUP" to "OFF" (page 65).

67

Operation

The remote does not function.
➝ The batteries in the remote are weak.
➝ There are obstacles between the remote and the player.
➝ The distance between the remote and the player is too far.
➝ The remote is not pointed at the remote sensor on the player.

The disc does not play.
➝ The disc is turned over.
Insert the disc with the playback side facing down.
➝ The disc is skewed.
➝ The player cannot play certain discs (page 8).
➝ The region code on the DVD does not match the player.
➝ Moisture has condensed inside the player (page 5).
➝ The player cannot play a recorded disc that is not correctly finalized (page 8).

The MP3 audio track cannot be played (page 50).
➝ The DATA CD is not recorded in an MP3 format that conforms to ISO 9660 Level 1/Level 2 or Joliet.
➝ The DATA DVD is not recorded in MP3 format that conforms to UDF (Universal Disk Format).
➝ The MP3 audio track does not have the extension ".MP3."
➝ The data is not formatted in MP3 even though it has the extension ".MP3."
➝ The data is not MPEG-1 Audio Layer III data.
➝ The player cannot play audio tracks in mp3PRO format.
➝ "MODE (MP3, JPEG)" is set to "IMAGE (JPEG)" (page 53).

The JPEG image file cannot be played (page 50).
➝ The DATA CD is not recorded in a JPEG format that conforms to ISO 9660 Level 1/Level 2, or Joliet.
➝ The DATA DVD is not recorded in JPEG format that conforms to UDF (Universal Disk Format).
➝ The file has an extension other than ".JPEG" or ".JPG."

68

➝ The image is larger than 3072 (width) × 2048 (height) in normal mode, or more than 3,300,000 pixels in progressive JPEG. (Some progressive JPEG files cannot be displayed even if the file size is within this specified capacity.)
➝ The image does not fit the screen (the image is reduced).
➝ "MODE (MP3, JPEG)" is set to "AUDIO (MP3)" (page 53).

The MP3 audio tracks and JPEG image files start playing simultaneously.
➝ "MODE (MP3, JPEG)" is set to "AUTO" (page 53).

The album/track/file names are not displayed correctly.
➝ The player can only display numbers and alphabet. Other characters are displayed as "*".

The disc does not start playing from the beginning.
➝ Program Play, Shuffle Play, Repeat Play, or A-B Repeat Play is selected (page 30).
➝ Resume play has taken effect (page 27).

The player starts playing the disc automatically.
➝ The disc features an auto playback function.
➝ "AUTO PLAY" in "CUSTOM SETUP" is set to "ON" (page 64).

Playback stops automatically.
➝ While playing discs with an auto pause signal, the player stops playback at the auto pause signal.

Some functions such as Stop, Search, Fast Play, Slow Play, Slow-motion Play, Repeat Play, Shuffle Play, or Program Play cannot be performed.
➝ Depending on the disc, you may not be able to do some of the operations above. Refer to the operating manual that comes with the disc.

The language for the sound track cannot be changed.
➝ Try using the DVD's menu instead of the direct selection button on the remote (page 28).
➝ Multilingual tracks are not recorded on the DVD being played.
➝ The DVD prohibits the changing of the language for the sound track.

The subtitle language cannot be changed or turned off.
➝ Try using the DVD's menu instead of the direct selection button on the remote (page 28).
➝ Multilingual subtitles are not recorded on the DVD being played.
➝ The DVD prohibits the changing of subtitles.

The angles cannot be changed.
➝ Try using the DVD's menu instead of the direct selection button on the remote (page 28).
➝ Multi-angles are not recorded on the DVD being played.
➝ The angle can only be changed when the "ᗺᖇ" indicator lights up on the front panel display (page 11).
➝ The DVD prohibits changing of the angles.

The player does not operate properly.
➝ When static electricity, etc., causes the player to operate abnormally, unplug the player.

5 numbers or letters are displayed on the screen and the front panel display.
➝ The self-diagnosis function was activated. (See the table on page 70.)

The disc tray does not open and "LOCKED" appears on the front panel display.
➝ Child Lock is set (page 26).

The disc tray does not open and "TRAY LOCKED" appears on the front panel display.
➝ Contact your Sony dealer or local authorized Sony service facility.

"Data error" appears on the TV screen when playing a DATA CD/DATA DVD.
➝ The MP3 audio track/JPEG image file you want to play is broken.
➝ The data is not MPEG-1 Audio Layer III data.
➝ The JPEG image file format does not conform to DCF (page 49).
➝ The JPEG image file has the extension ".JPG" or ".JPEG," but is not in JPEG format.

69

Self-diagnosis Function
(When letters/numbers appear in the display)

When the self-diagnosis function is activated to prevent the player from malfunctioning, a five-character service number (e.g., C 13 50) with a combination of a letter and four digits appears on the screen and the front panel display. In this case, check the following table.

First three characters of the service number	Cause and/or corrective action
C 13	The disc is dirty or recorded in a format that this player cannot play (page 8). ➝ Clean the disc with a soft cloth or check its format (page 2).
C 31	The disc is not inserted correctly. ➝ Re-insert the disc correctly.
E XX (xx is a number)	To prevent a malfunction, the player has performed the self-diagnosis function. ➝ Contact your nearest Sony dealer or local authorized Sony service facility and give the 5-character service number. Example: E 61 10

70

Glossary

Album (page 49, 51)
A unit in which to store JPEG image files or MP3 audio tracks on a DATA CD/DATA DVD. ("Album" is an exclusive definition for this player.)

Chapter (page 11)
Sections of a picture or a music feature that are smaller than titles. A title is composed of several chapters. Depending on the disc, no chapters may be recorded.

Dolby Digital (page 20, 66)
Digital audio compression technology developed by Dolby Laboratories. This technology conforms to multi-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. Dolby Digital provides the same discrete channels of high quality digital audio found in "Dolby Digital" theater surround sound systems. Good channel separation is realized because all of the channel data is recorded discretely and little deterioration is realized because all channel data processing is digital.

DTS (page 20, 66)
Digital audio compression technology that Digital Theater Systems, Inc. developed. This technology conforms to multi-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. DTS provides the same discrete channels of high quality digital audio. Good channel separation is realized because all of the channel data is recorded discretely and little deterioration is realized because all channel data processing is digital.

DVD VIDEO (page 7)
A disc that contains up to 8 hours of moving pictures even though its diameter is the same as a CD.
The data capacity of a single-layer and single-sided DVD is 4.7 GB (Giga Byte), which is 7 times that of a CD. The data capacity of a double-layer and single-sided DVD is 8.5 GB, a single-layer and double-sided DVD is

9.4 GB, and double-layer and double-sided DVD is 17 GB.

The picture data uses the MPEG 2 format, a worldwide standard of digital compression technology. The picture data is compressed to about 1/40 (average) of its original size. The DVD also uses a variable rate coding technology that changes the data to be allocated according to the status of the picture. Audio information is recorded in a multi-channel format, such as Dolby Digital, allowing you to enjoy a more realistic audio presence.

Furthermore, various advanced functions such as the multi-angle, multilingual, and Parental Control functions are provided with the DVD.

DVD-RW (page 7)

A DVD-RW is a recordable and rewritable disc that is the same size as a DVD VIDEO. The DVD-RW has two different modes: VR mode and Video mode. DVD-RWs created in Video mode have the same format as a DVD VIDEO, while discs created in VR (Video Recording) mode allow the contents to be programmed or edited.

DVD+RW (page 7)

A DVD+RW (plus RW) is a recordable and rewritable disc. DVD+RWs use a recording format that is comparable to the DVD VIDEO format.

File (page 49, 52)

A JPEG image recorded on a DATA CD/DATA DVD ("File" is an exclusive definition for this player.) A single file consist of a single image.

Film based software, Video based software (page 19)

DVDs can be classified as Film based or Video based software. Film based DVDs contain the same images (24 frames per second) that are shown at movie theaters. Video based DVDs, such as television dramas or sit-coms, displays images at 30 frames/60 fields per second.

Normal (Interlace) format (page 19)

Normal (Interlace) format shows every other line of an image as a single "field" and is the standard method for displaying images on television. The even number field shows the even numbered lines of an image, and the odd numbered field shows the odd numbered lines of an image.

Progressive format (page 19)

Compared to the Interlace format that alternately shows every other line of an image (field) to create one frame, the Progressive format shows the entire image at once as a single frame. This means that while the Interlace format can show 30 frames/60 fields in one second, the Progressive format can show 60 frames in one second. The overall picture quality increases and still images, text, and horizontal lines appear sharper. This player is compatible with the 480 progressive format.

Progressive JPEG

Progressive JPEGs are used mostly on the internet. They are different from other JPEGs in that they "fade in" gradually instead of being drawn from top to bottom when displayed on a browser. This lets you view the image while it is being downloaded.

Title (page 11)

The longest section of a picture or music feature on a DVD, movie, etc., in video software, or the entire album in audio software.

Additional Information

Specifications

System
Laser: Semiconductor laser
Signal format system: NTSC

Audio characteristics
Frequency response: DVD VIDEO (PCM 96 kHz): 2 Hz to 44 kHz (44 kHz: –2 dB ±1 dB)/CD: 2 Hz to 20 kHz (±0.5 dB)
Signal-to-noise ratio (S/N ratio): 115 dB (LINE OUT L/R (AUDIO) jacks only)
Harmonic distortion: 0.003 %
Dynamic range: DVD VIDEO: 103 dB/CD: 99 dB
Wow and flutter: Less than detected value (±0.001% W PEAK)

Outputs
(**Jack name:** Jack type/Output level/Load impedance)
LINE OUT (AUDIO): Phono jack/2 Vrms/ 10 kilohms
DIGITAL OUT (OPTICAL): Optical output jack/–18 dBm (wave length 660 nm)
DIGITAL OUT (COAXIAL): Phono jack/ 0.5 Vp-p/75 ohms
COMPONENT VIDEO OUT(Y, P_B, P_R): Phono jack/Y: 1.0 Vp-p/P_B, P_R: interlace*[1] = 0.648 Vp-p, progressive or interlace*[2] = 0.7 Vp-p/75 ohms
*1 BLACK LEVEL (COMPONENT OUT) is ON
*2 BLACK LEVEL (COMPONENT OUT) is OFF
LINE OUT (VIDEO): Phono jack/1.0 Vp-p/ 75 ohms
S VIDEO OUT: 4-pin mini DIN/Y: 1.0 Vp-p, C: 0.286 Vp-p/75 ohms

General
Power requirements:
120 V AC, 60 Hz
Power consumption: 12 W
Dimensions (approx.):
430 × 83 × 410 mm (16 ¹⁵/₁₆ × 3 ¹⁷/₆₄ × 16 ⁹/₆₄ in.) (width/height/depth) incl. projecting parts
Mass (approx.): 4.4 kg (9 ⁵⁸/₆₄ lb)
Operating temperature: 5 °C to 35 °C (41 °F to 95 °F)
Operating humidity: 25 % to 80 %
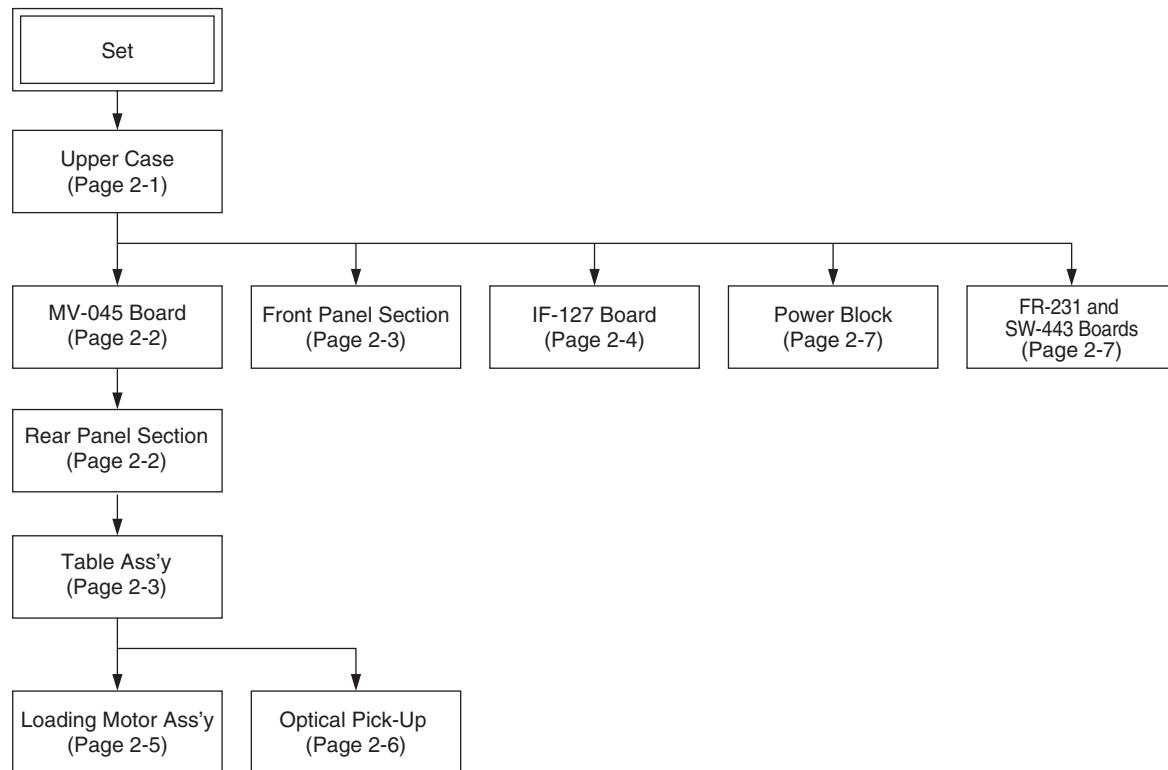
Supplied accessories
See page 16.

Specifications and design are subject to change without notice.

ENERGY STAR® is a U.S. registered mark. As an ENERGY STAR® Partner, Sony Corporation has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.
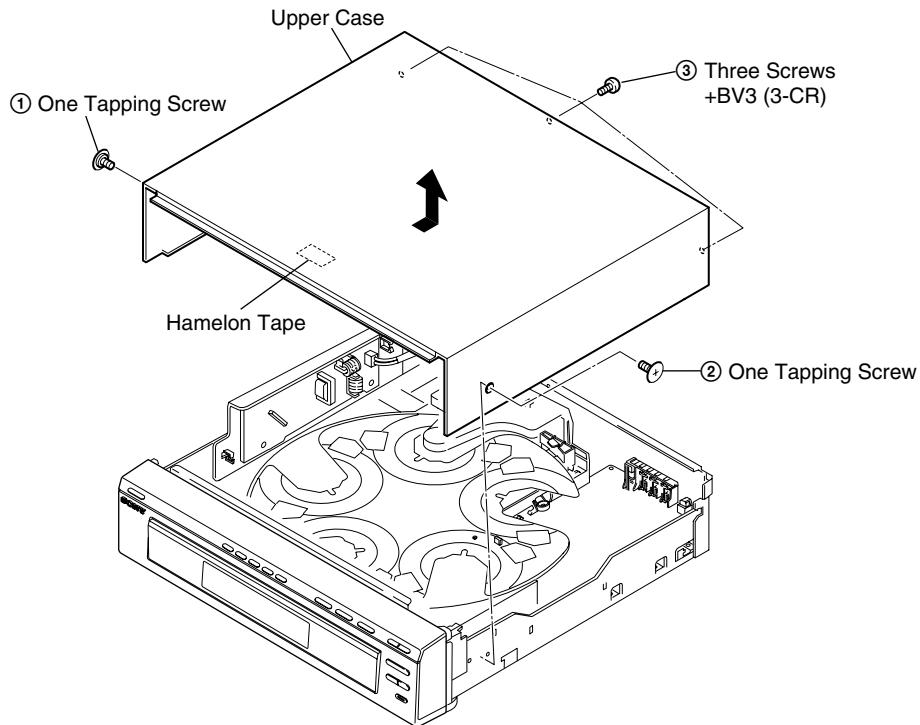
71   72

SECTION 2
DISASSEMBLY

2-1. DISASSEMBLY

• This set can be disassembled in the order shown below.

```
                    ┌──────────────┐
                    │     Set      │
                    └──────┬───────┘
                           │
                    ┌──────────────┐
                    │  Upper Case  │
                    │ (Page 2-1)   │
                    └──────┬───────┘
                           │
    ┌──────────┬───────────┼───────────┬───────────┐
    │          │           │           │           │
┌────────┐ ┌─────────┐ ┌─────────┐ ┌─────────┐ ┌─────────┐
│MV-045  │ │Front    │ │IF-127   │ │Power    │ │FR-231 and│
│Board   │ │Panel    │ │Board    │ │Block    │ │SW-443   │
│(Page   │ │Section  │ │(Page    │ │(Page    │ │Boards   │
│2-2)    │ │(Page    │ │2-4)     │ │2-7)     │ │(Page    │
│        │ │2-3)     │ │         │ │         │ │2-7)     │
└───┬────┘ └─────────┘ └─────────┘ └─────────┘ └─────────┘
    │
┌──────────┐
│Rear Panel│
│Section   │
│(Page 2-2)│
└───┬──────┘
    │
┌──────────┐
│Table Ass'y│
│(Page 2-3) │
└───┬───────┘
    │
┌───────┴────┐
│            │
┌────────┐ ┌─────────┐
│Loading │ │Optical  │
│Motor   │ │Pick-Up  │
│Ass'y   │ │(Page    │
│(Page   │ │2-6)     │
│2-5)    │ │         │
└────────┘ └─────────┘
```
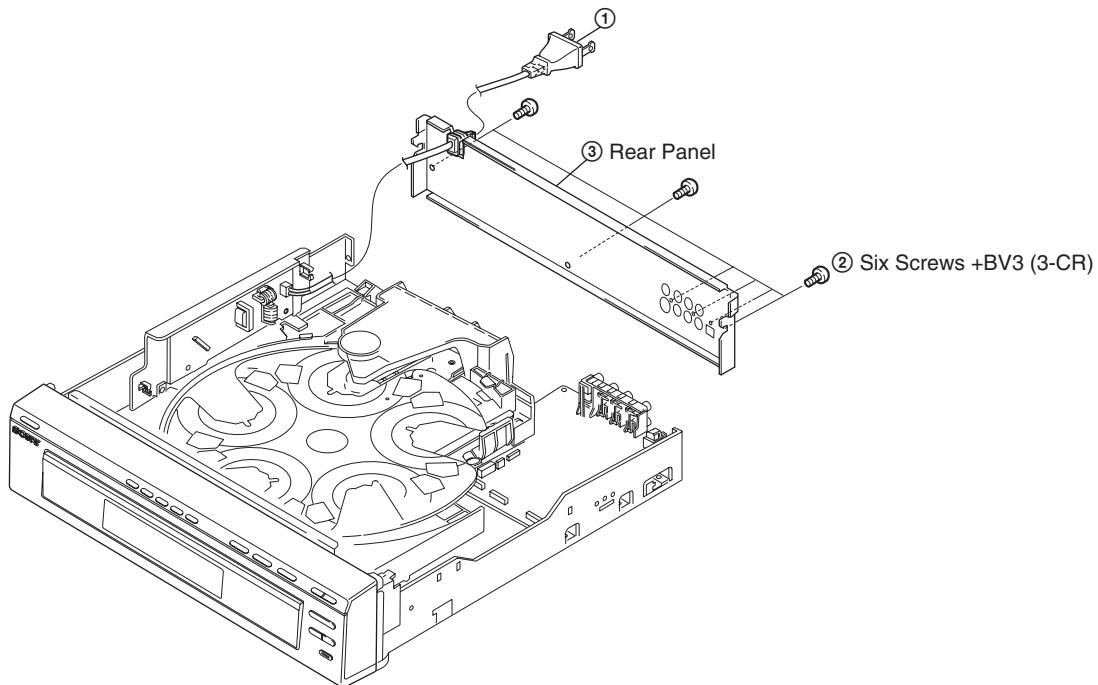
NOTE: Follow the disassembly procedure in the numerical order given.

2-2. UPPER CASE

DVP-NC60P

2-3. REAR PANEL SECTION

①

③ Rear Panel

② Six Screws +BV3 (3-CR)

2-4. MV-045 BOARD

④ Harness PM-102
(CN501, 10P)

⑧ FMO-006 Flat Flexible Cable
(CN101, 24P)

a

③ Five Screws BV3 (3-CR)

⑤ MD-109 Harness
(CN201, 6P)

⑦ FIM-008 Flat Flexible Cable
(CN107, 23P)

⑥ FIM-009 Flat Flexible Cable
(CN202, 5P)

MV-045 Board

a

Pull the tray in the
direction of the arrow Ⓑ

Ⓑ
②

Note:

Before remove FMO-006
Flat Flexible Cable, please follow
caution point at page 2-6.

① Ⓐ

Insert a flat-head (-) screwdriver into a hole at the bottom,
the cam gear in the direction of the arrow Ⓐ.

2-5. FRONT PANEL SECTION

Connector
(CN201)

Two Screws
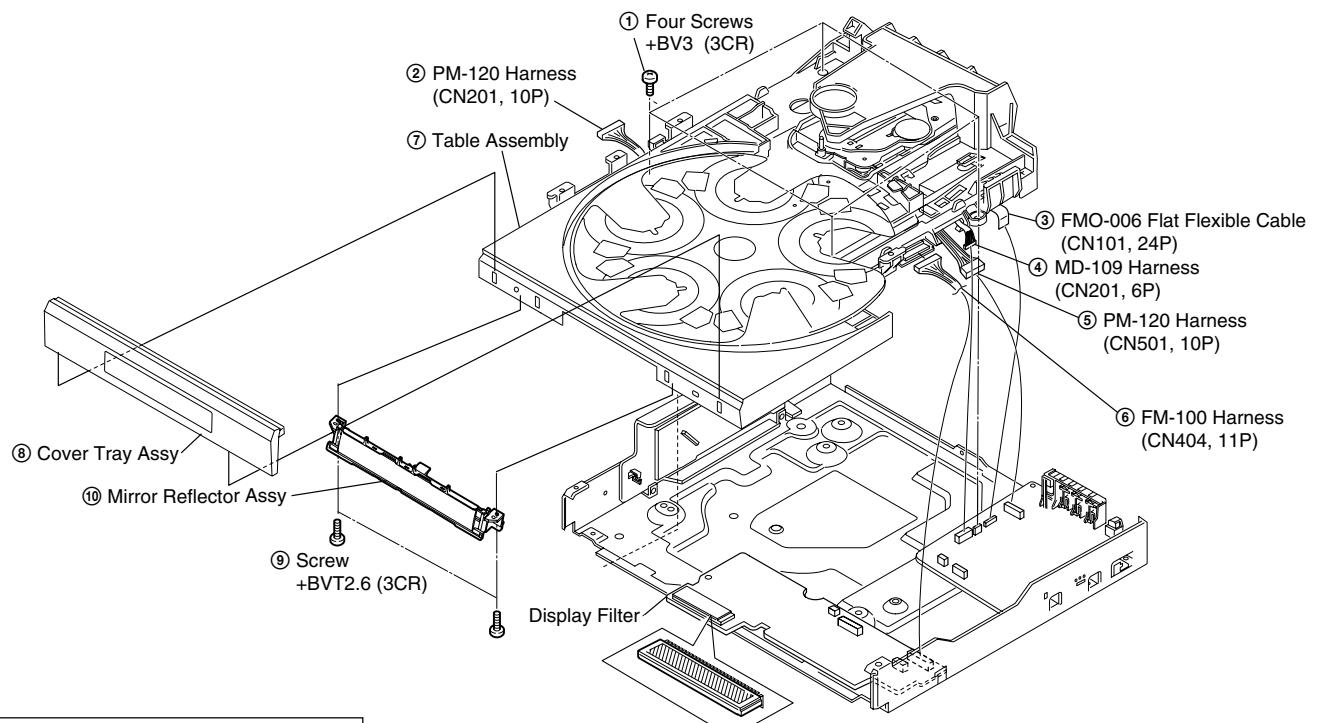+BV3 (3-CR)

①

② FIS-004 Flat Flexible Cable
(CN405, 11P)

IF-127 PWB

③ Front Panel Section

Note:

If cover tray removed its should be replaced with new cover tray.

2-6. TABLE ASS'Y

① Four Screws
+BV3 (3CR)

② PM-120 Harness
(CN201, 10P)

⑦ Table Assembly

③ FMO-006 Flat Flexible Cable
(CN101, 24P)

④ MD-109 Harness
(CN201, 6P)

⑤ PM-120 Harness
(CN501, 10P)

⑥ FM-100 Harness
(CN404, 11P)

⑧ Cover Tray Assy

⑩ Mirror Reflector Assy
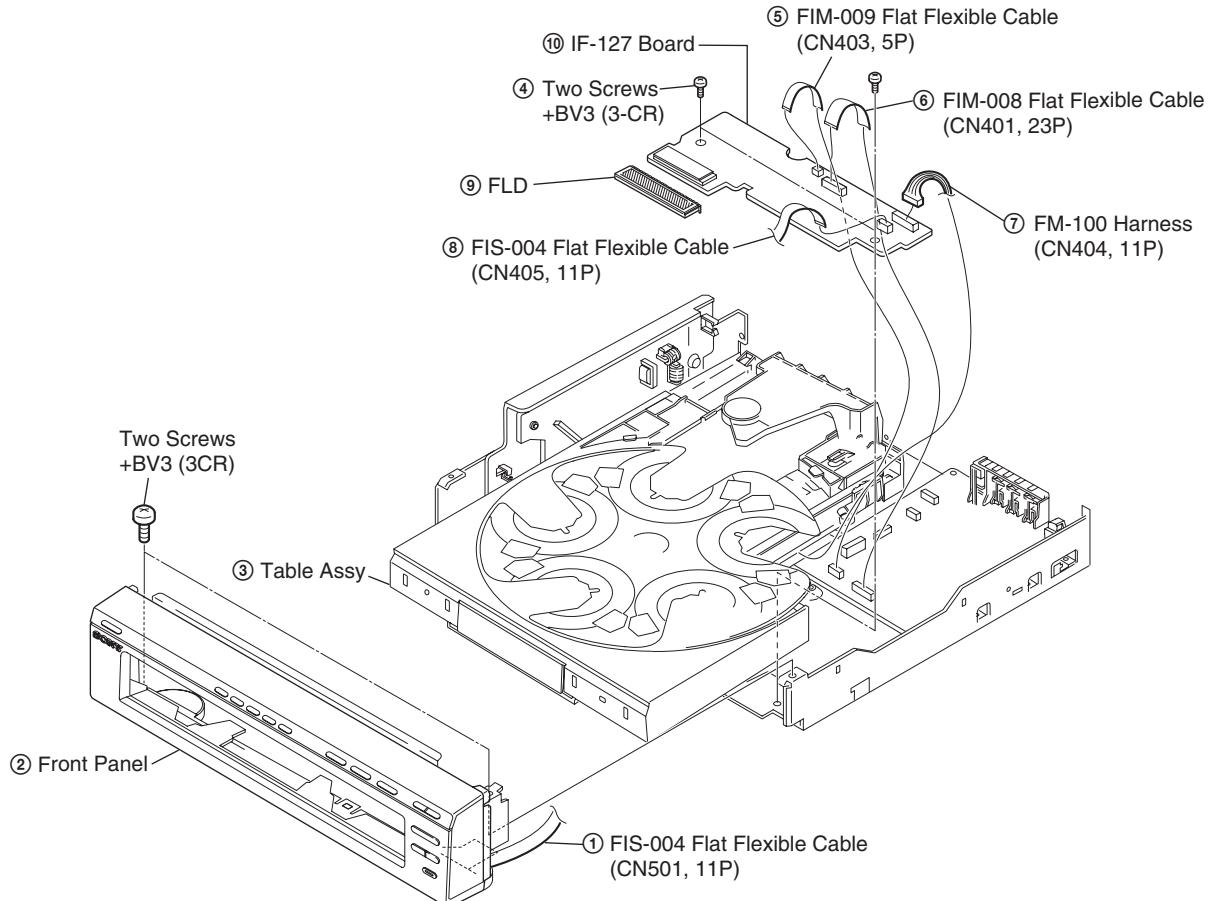
⑨ Screw
+BVT2.6 (3CR)

Display Filter

Note:

Before remove FMO-006 Flat Flexible Cable, please follow point at page 2-6.
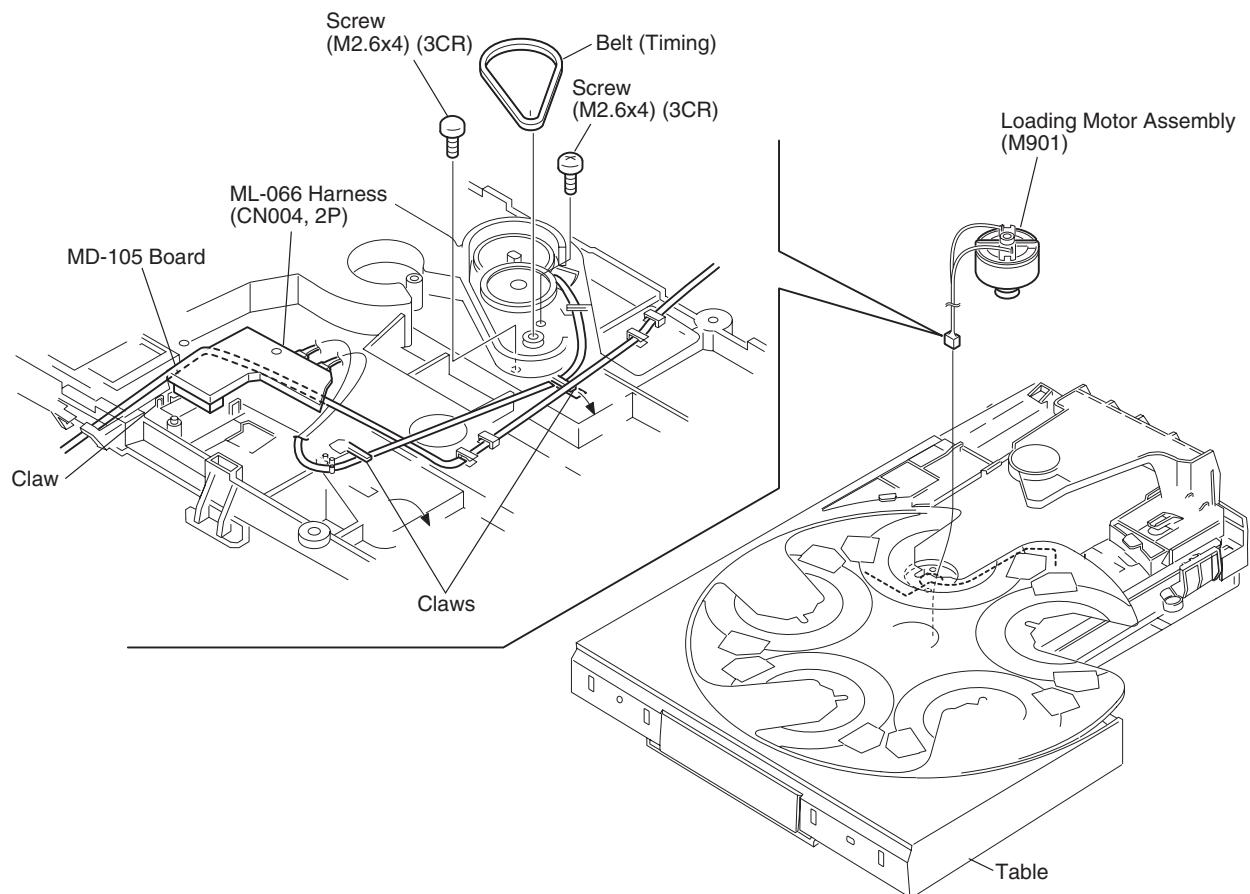
2-7. IF-127 BOARD

Note:

Caution Point on the PWB IF-127

When handling IF-127 PWB avoid contact with the sharp metal edge on the top side of Vacuum Fluorescent Display (ND401).

⑩ IF-127 Board

⑤ FIM-009 Flat Flexible Cable (CN403, 5P)

④ Two Screws +BV3 (3-CR)

⑥ FIM-008 Flat Flexible Cable (CN401, 23P)

⑨ FLD

⑦ FM-100 Harness (CN404, 11P)

⑧ FIS-004 Flat Flexible Cable (CN405, 11P)

Two Screws +BV3 (3CR)

③ Table Assy

② Front Panel

① FIS-004 Flat Flexible Cable (CN501, 11P)

2-8. LOADING MOTOR ASS'Y

Screw
(M2.6x4) (3CR)

Belt (Timing)

Screw
(M2.6x4) (3CR)

Loading Motor Assembly
(M901)

ML-066 Harness
(CN004, 2P)

MD-105 Board

Claw

Claws

Table

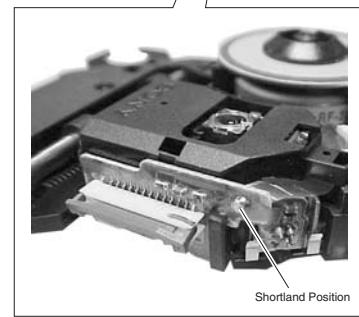## 2-9. OPTICAL PICK-UP (DEVICE, OPTICAL KHM-310CAB/C2RP)
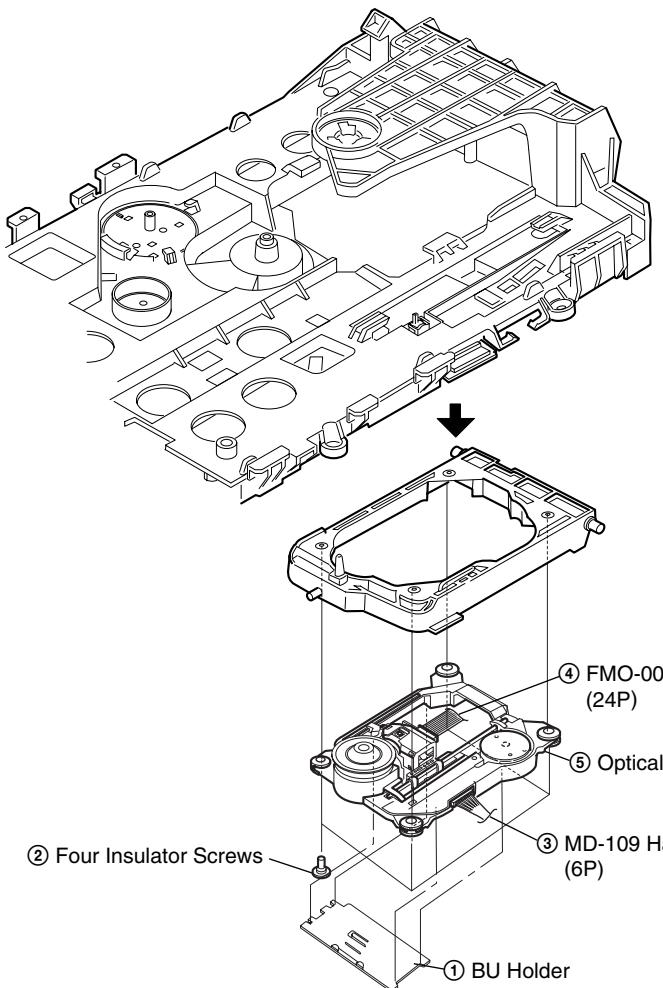
Note:

Solder short land before remove the harness from 24 pin BU connector.

Shortland Position

④ FMO-006 Flat Flexible Cable (24P)

⑤ Optical Pick-Up

② Four Insulator Screws

③ MD-109 Harness (6P)

① BU Holder
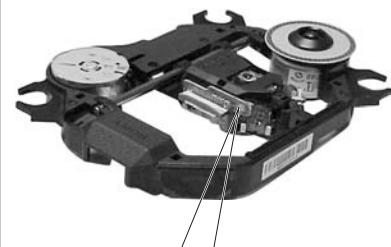
Caution Point on the Laser Diode:

Laser Diode in the optical Device is very sensitive to Surge Current or ElectroStatic Discharge (ESD):

After take-out FMO-006 Flexible cable from CN101 of MV-045 board immediately ground FMO-006 Flexible cable pattern using short clip. Metal paper clip can be used as short clip.

2-10. POWER BLOCK

Holder, PS

③ Two claws

② Two screws
+BV3(3-CR)

④ Power block

Power cord

① PM-120 harness
(CN201, 10P)

SONY
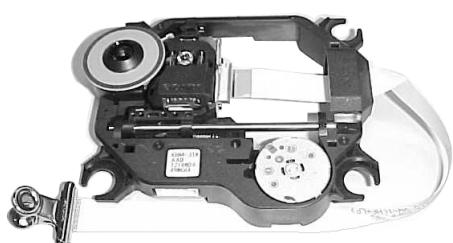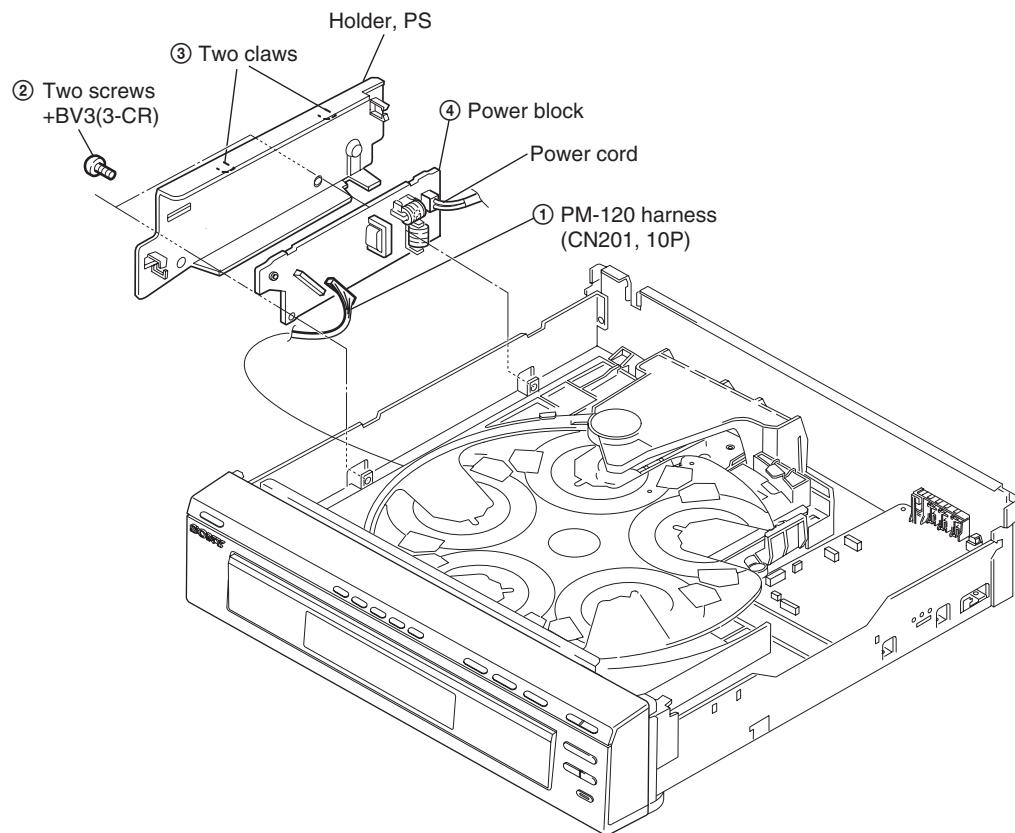
2-11. FR-231 AND SW-443 BOARDS

① Screw +BVTP 2.6 (3CR)

④ FR-231 board

SONY

③

SW-443 board

Front panel

② FIS-004 flat flexible cable
(CN501, 11P)

2-12. INTERNAL VIEWS

PH101 (on the SE-145 board)

Optical pick-up
(DEVICE, OPTICAL
KHM-310CAB/C2RP/
Service assembly)

PH102
(on the SE-145 board)

TD unit ass'y

Encoder ass'y
(loading)

Loading motor ass'y
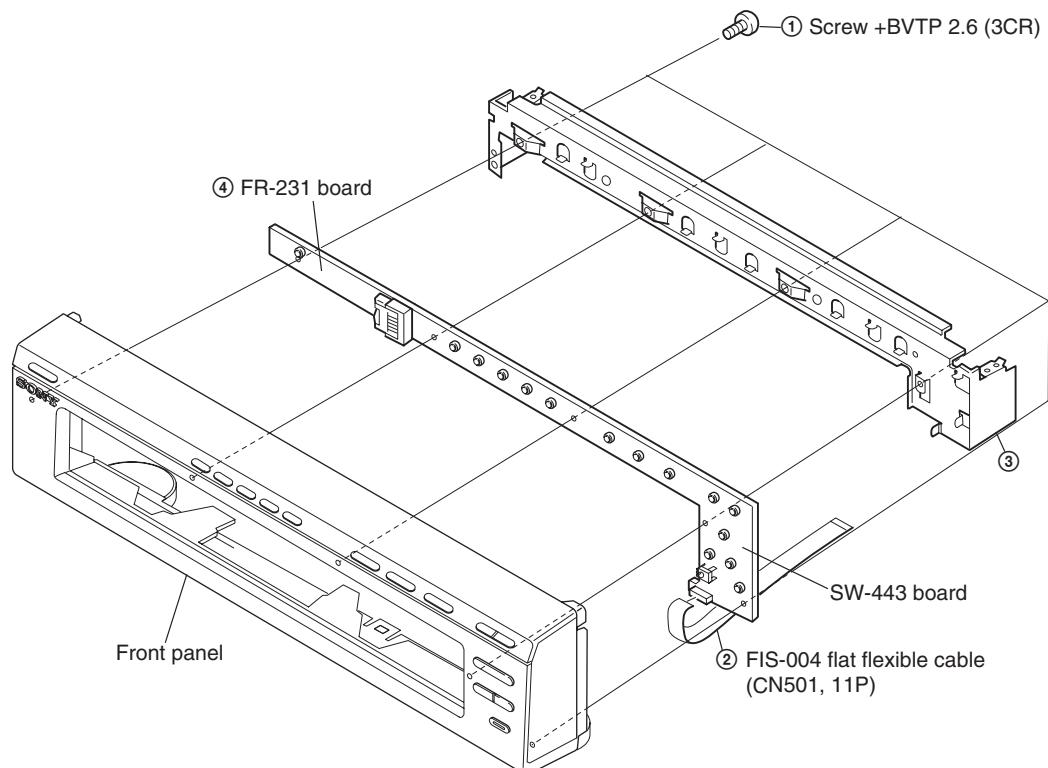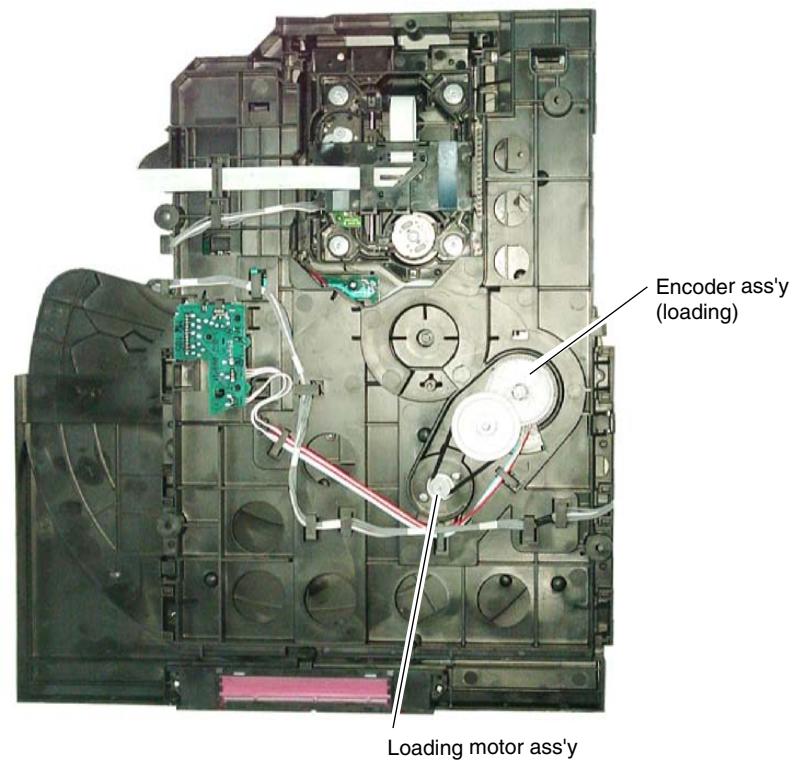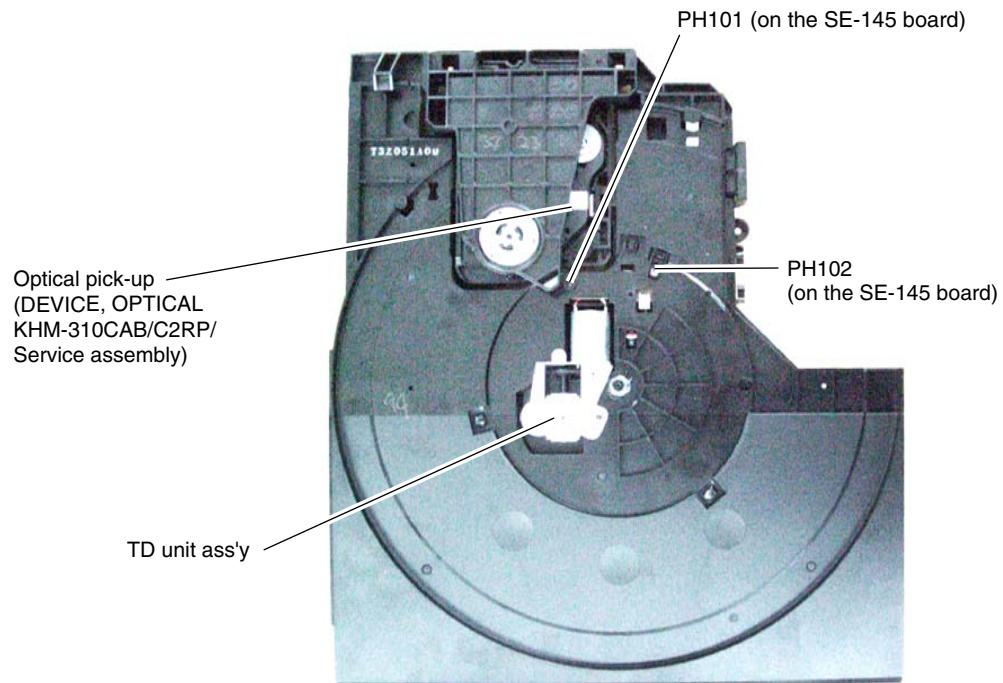
2-13. CIRCUIT BOARDS LOCATION

Power board

FR-231 board
(FR)

IF-127 board
(INTERFACE)

SW-443 board
(SWITCH)

MV-045 board
(CPU, Servo-DSP, AVDEC,
DRIVE, VIDEO, AUDIO, POWER)
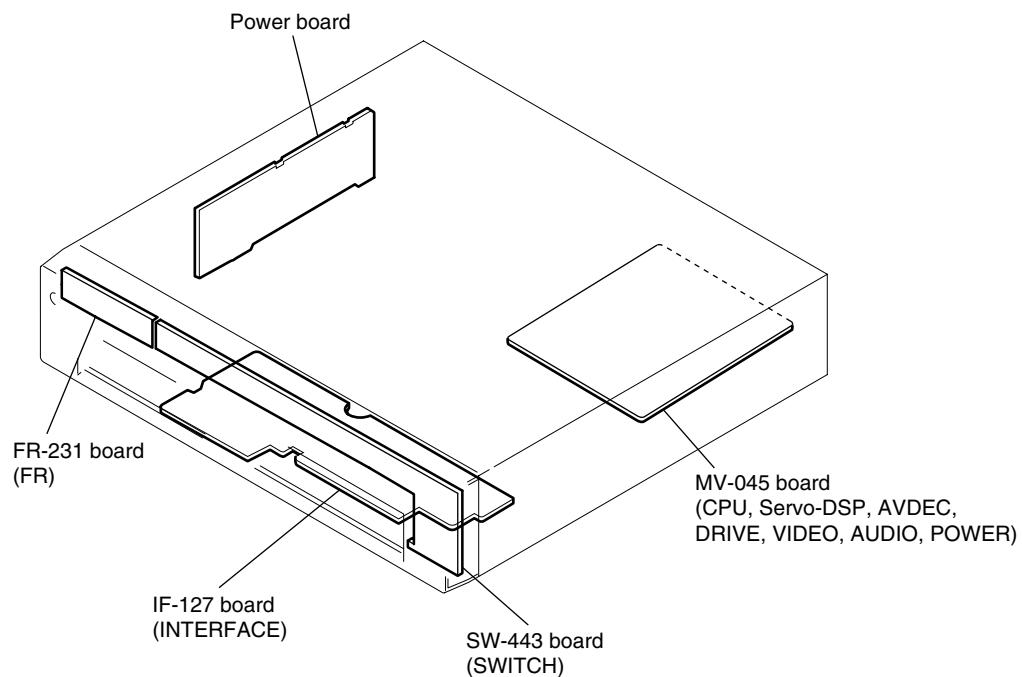
MEMO

SECTION 3
BLOCK DIAGRAMS

3-1. OVERALL BLOCK DIAGRAM

TURN TABLE

ROTATE M

TRAY DETECT

SW443 BOARD (SEE PAGE 3-13 to 3-14)

FUNCTION KEY

IC501 IR

LED 501

FR231 BOARD (SEE PAGE 3-13 to 3-14)

POWER SWITCH

ND401 VFD

SWITCHING REGULATOR

IF-124 BOARD (SEE PAGE 3-13 to 3-15)

IC403 TRAY DRIVER

DRIVER CIRCUIT

Vkk

EVER 3.3V

SW-10V

IC474

IC404 IF MICON

IC408 RESET IC

PRIMARY

TRANSFORMER

MV-045 BOARD (SEE PAGE 3-5 to 3-12)

AUDIO/VIDEO OUTPUT

J301

IC102 FLASH MEMORY

IC103 EEPROM

IC304 VIDEO BUFFER

IC401 AUDIO LPF

MICROPROCESSOR

SERIAL BUS

IC406 DA CONVERTER

IC201 FOCUS TRACKING COIL DRIVE SPINDLE/SLED /LOADING MOTOR DRIVE

IC101

IC108 RESET IC

SECONDARY

EVER-10V

EVER+5V

SW+8V

SW+5V

SW+3.3V

EVER+11V

RF AMP

O/I POWER

P-CONT

IC104 SDRAM

BASE UNIT SERVICE ASSY (DEVICE, OPTICAL KHM-310CAB/C2RP)

INLIMIT SENSOR

OPTICAL DEVICE

DVD / CD PDIC

FOCUS COIL

TRACKING COIL

M SPINDLE MOTOR

M SLED MOTOR

M LOADING MOTOR

CHUCK/TRAY DETECT

Notes:

MV-045 mounted PWB must be replaced if IC103 (EEPROM IC) is damaged or not functioning.

The old MV-045 mounted PWB must be completely disposed.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

DVP-NC60P

3-2. POWER LINE BLOCK DIAGRAM

POWER BOARD (SRV1487UC)
(SEE PAGE 4-31 to 4-32)

T101
D411 L421
D211 L211 Q211
Q712
Bridge Rectifier Diode
ACIN
F101
2 Line filters
L101, L102
CN101
Transformer
Switching IC & Circuit
D511 L512
D311 L312 Q311
Q611
PC101 Photo Coupler
IC611 Shunt Reg

8 P.CONT 8
9 POWER 9
10 EVER-10V 10
6 SW+5V 6
5 SW+3.3V 5
4 EVER+5V 4
3 EVER+11V 3
CN201 SW+8V 1 CN501

MV-045 BOARD
(SEE PAGE 4-5 to 4-16)

Video Buffer IC304
Q501 SW-10V
-5V Reg IC303
3.3V Reg IC 105/7
MTK IC IC101
1.8V Reg IC110
SW + 5V
SW + 3.3V
MUTE DRIVER D401
EVER + 5V
SDRAM IC104
EEPROM IC103
RESET IC IC108
FLASH ROM IC102
Q401 AU+11V
+5V Reg IC403
Coaxial Q411
Q416 AU-10V
Audio Buffer IC401
Audio DAC IC406
IC405 Optical Out
Motor Driver IC201
CN101 VCC OPTICAL DEVICE
11
15 13 11 CN107

SW-443 BOARD
(SEE PAGE 4-21 to 4-22)

CN502
3
2
D501
PROGRESSIVE
IC501 REMOTE COMMANDER RECEIVER

CN501
3
2 SW+5V
11 SW+3.3V
10 EVER+3.3V

IF-127 BOARD
(SEE PAGE 4-19 to 4-20)

CN405
9
10
1 Q403
2

EVER+5V
11 2
CN401
9
IC474 IC REGULATOR
5 and 6 SW+8V
12 21 CN401
IC404 IF CON
BO PROG LED
26 PCONT
12 PONCHK VKK
Q401,402 T401
D403-D406
DC/DC CONVERTER
F1
F2
*N401 FLUORESCENT INDICATOR TUBE
IC408 RESET
IC403 TURN TABLE DRIVER

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

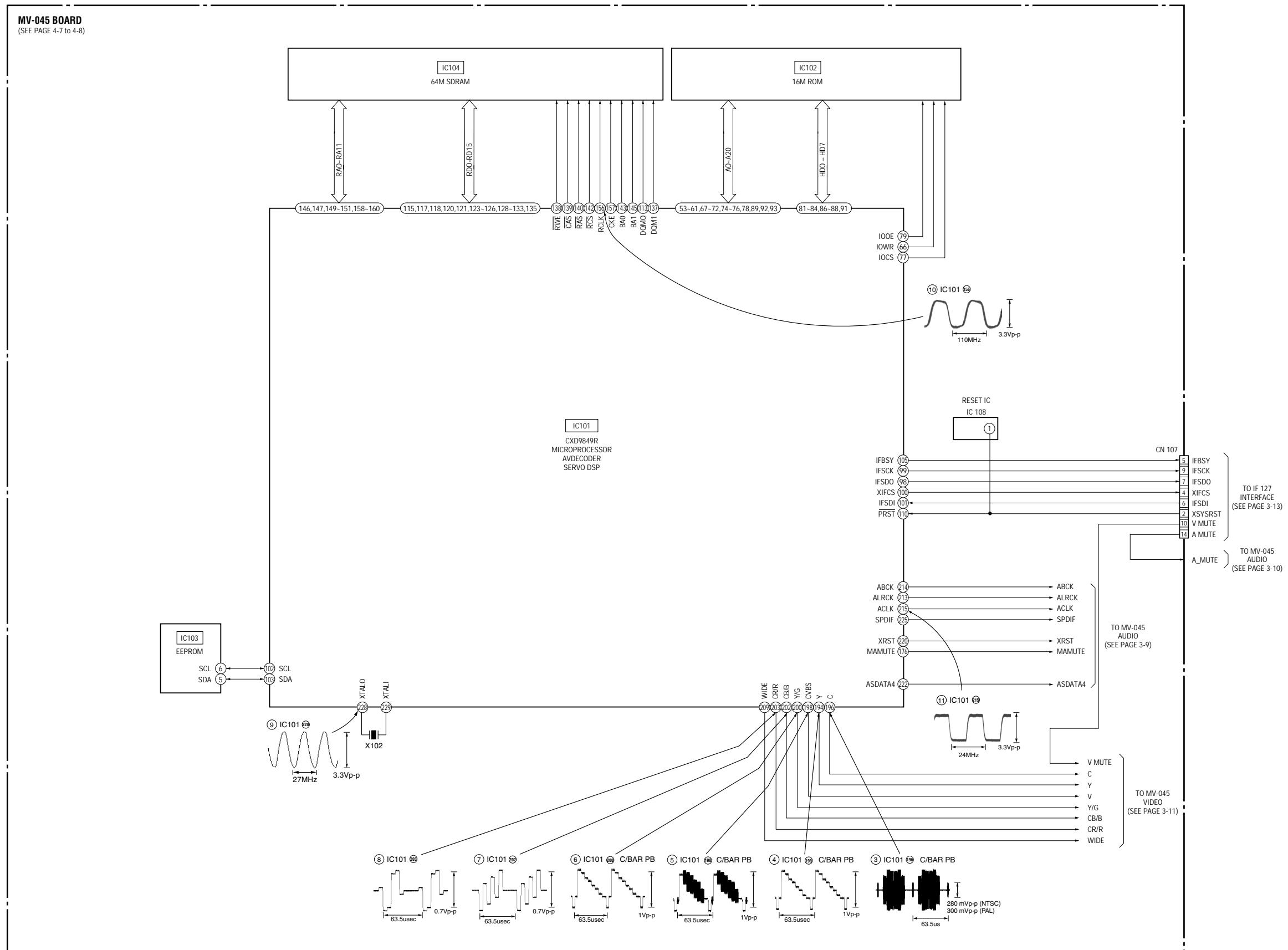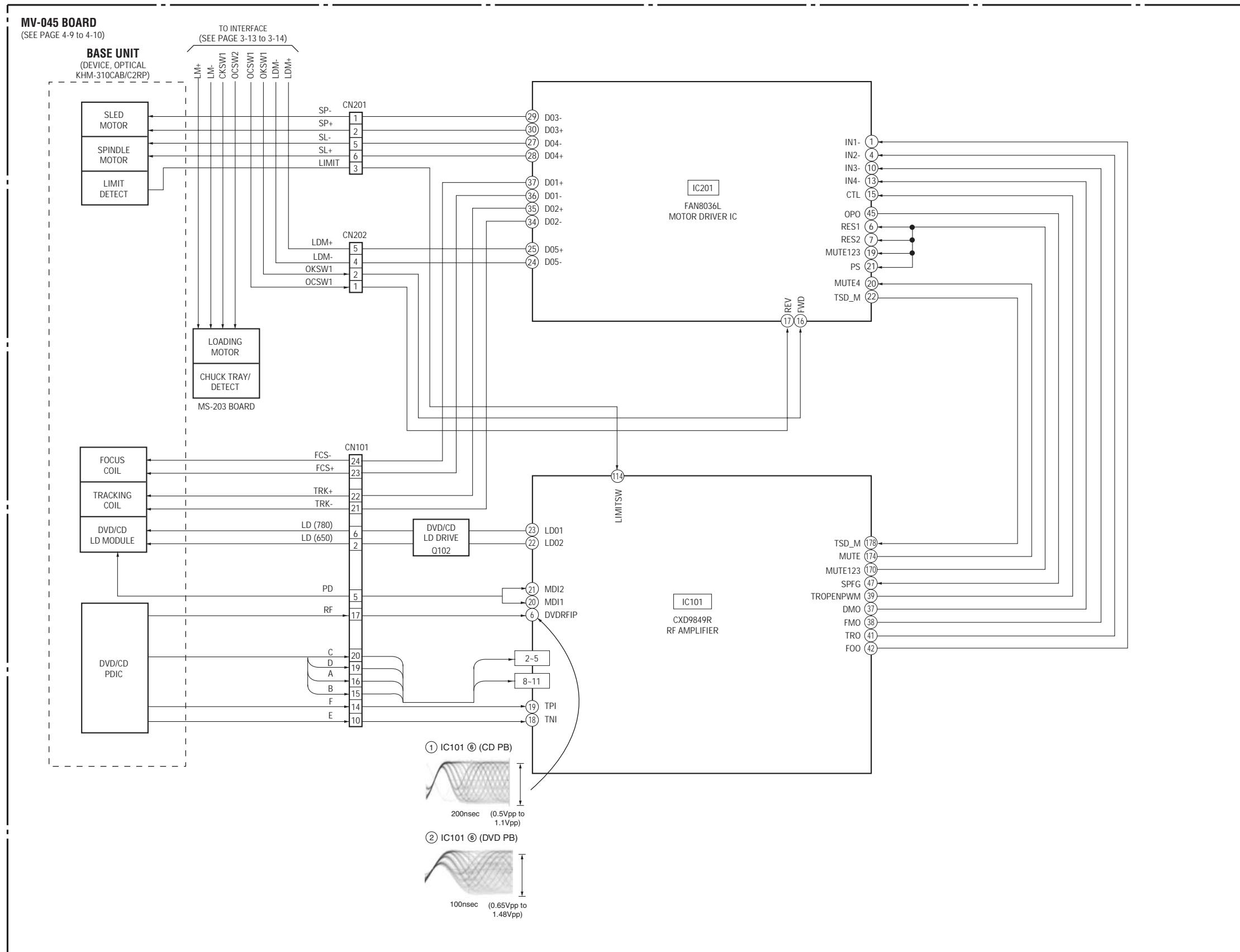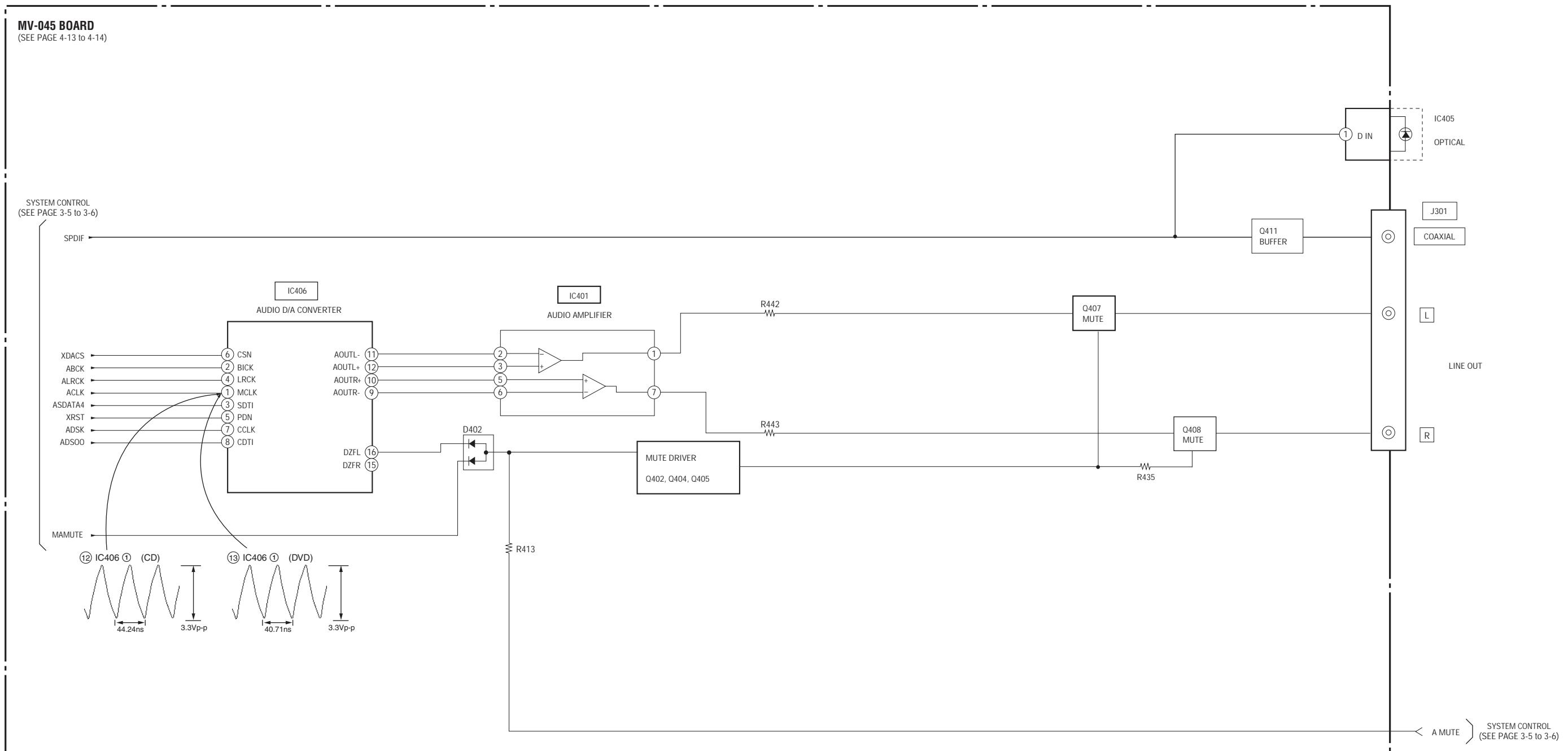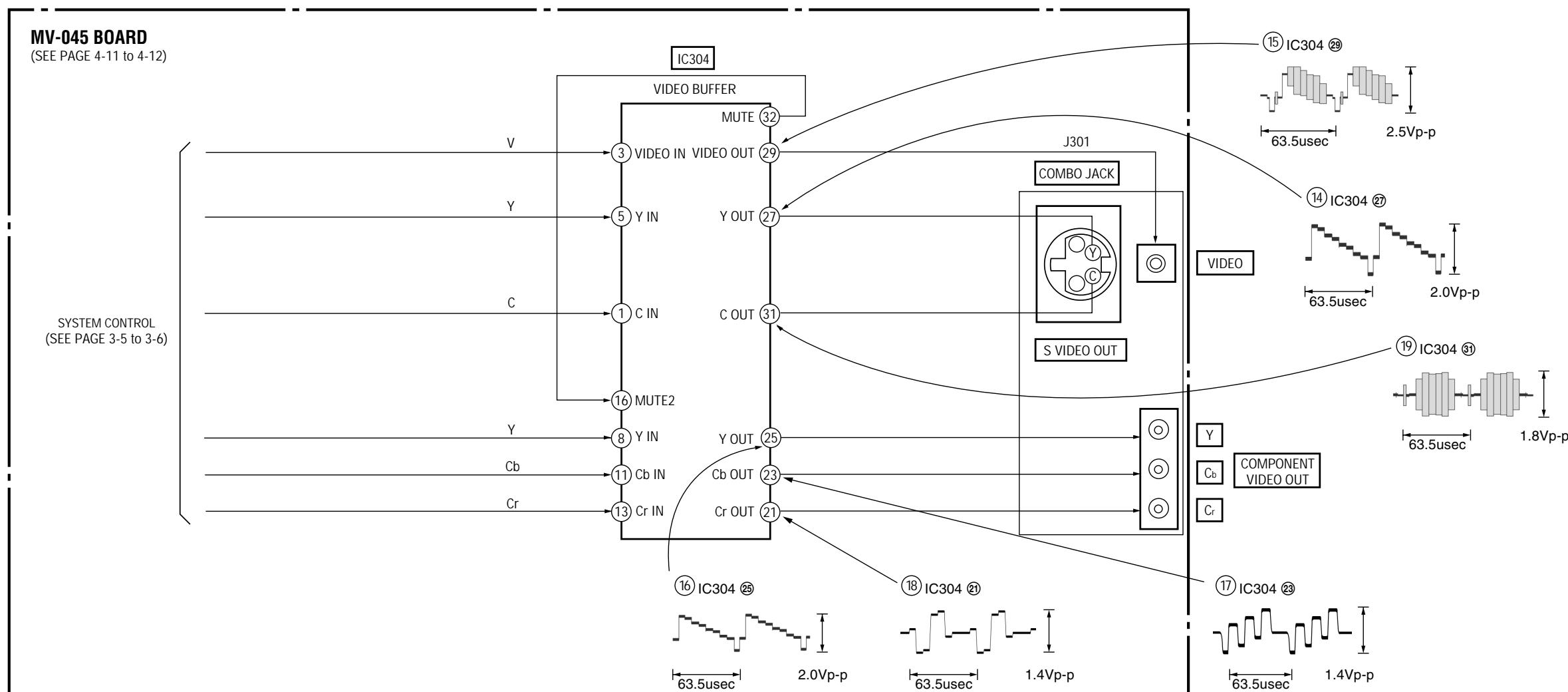## 3-3. SYSTEM CONTROL/SIGNAL PROCESSOR BLOCK DIAGRAM
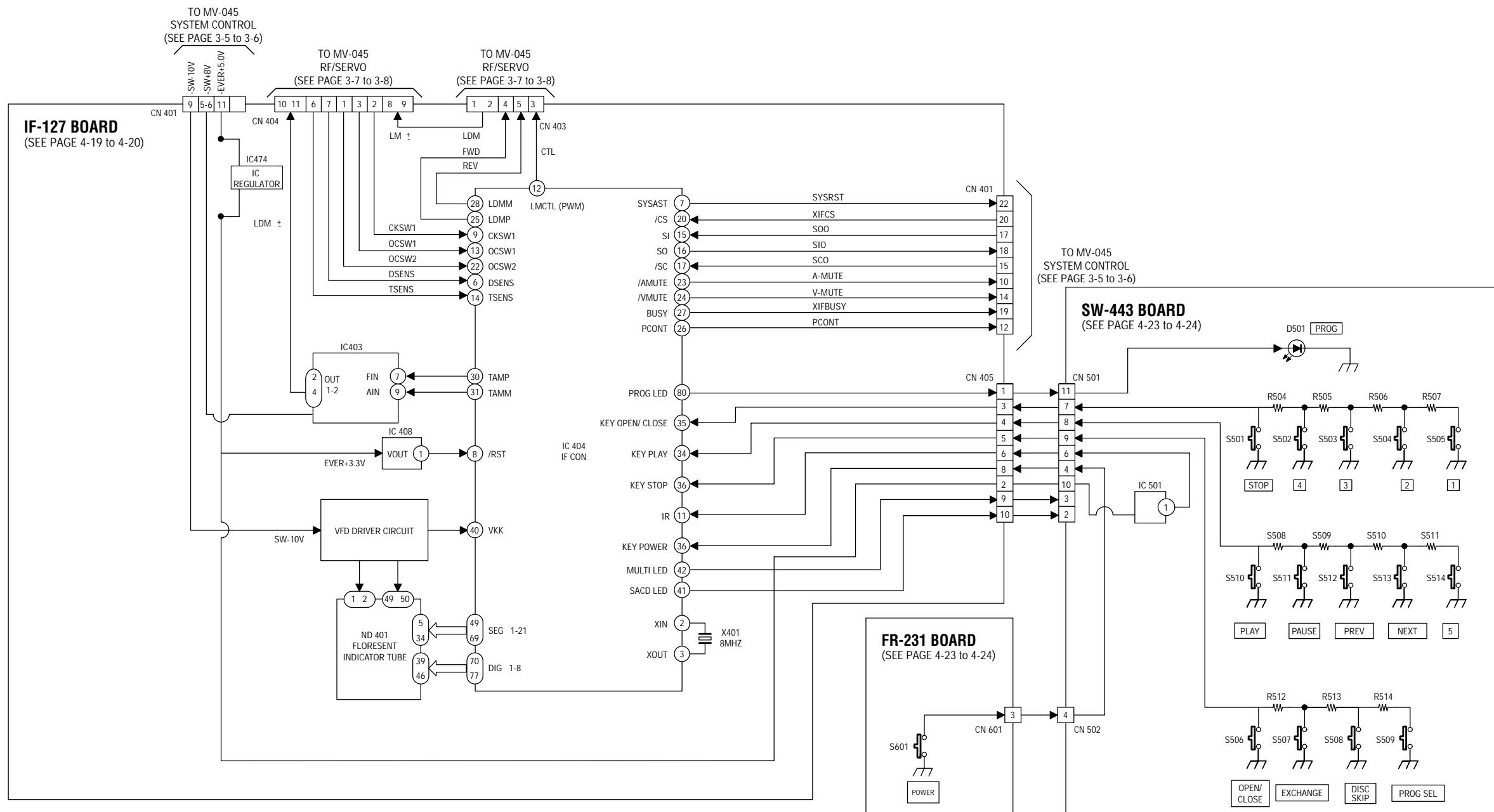
DVP-NC60P

3-4. RF/SERVO BLOCK DIAGRAM

MV-045 BOARD
(SEE PAGE 4-9 to 4-10)

BASE UNIT
(DEVICE, OPTICAL
KHM-310CAB/C2RP)

TO INTERFACE
(SEE PAGE 3-13 to 3-14)

LM+
LM-
CKSW1
OCSW2
OCSW1
OKSW1
LDM-
LDM+

SLED MOTOR

SPINDLE MOTOR

LIMIT DETECT

CN201
SP-   1   29 D03-
SP+   2   30 D03+
SL-   5   27 D04-
SL+   6   28 D04+
LIMIT 3

37 D01+
36 D01-
35 D02+
34 D02-

CN202
LDM+   5   25 D05+
LDM-   4   24 D05-
OKSW1 2
OCSW1 1

IC201
FAN8036L
MOTOR DRIVER IC

IN1-   1
IN2-   4
IN3-   10
IN4-   13
CTL   15
OPO   45
RES1   6
RES2   7
MUTE123 19
PS   21
MUTE4 20
TSD_M 22

REV 17
FWD 16

LOADING MOTOR

CHUCK TRAY/ DETECT

MS-203 BOARD

FOCUS COIL

TRACKING COIL

DVD/CD LD MODULE

CN101
FCS-   24
FCS+   23
TRK+   22
TRK-   21
LD (780) 6   23 LD01
LD (650) 2   22 LD02

DVD/CD LD DRIVE Q102

LIMITSW 114

IC101
CXD9849R
RF AMPLIFIER

TSD_M   178
MUTE   174
MUTE123 170
SPFG   47
TROPENPWM 39
DMO   37
FMO   38
TRO   41
FOO   42

PD   5   21 MDI2
           20 MDI1
RF   17   6 DVDRFIP

DVD/CD PDIC

C   20
D   19   2-5
A   16
B   15   8-11
F   14   19 TPI
E   10   18 TNI

① IC101 ⑥ (CD PB)
200nsec   (0.5Vpp to 1.1Vpp)

② IC101 ⑥ (DVD PB)
100nsec   (0.65Vpp to 1.48Vpp)

3-5. AUDIO BLOCK DIAGRAM

MV-045 BOARD
(SEE PAGE 4-13 to 4-14)

IC405
D IN
OPTICAL

SYSTEM CONTROL
(SEE PAGE 3-5 to 3-6)

SPDIF

J301
COAXIAL

Q411
BUFFER

IC406
AUDIO D/A CONVERTER

IC401
AUDIO AMPLIFIER

R442

Q407
MUTE

L

LINE OUT

XDACS — 6 CSN
ABCK — 2 BICK
ALRCK — 4 LRCK
ACLK — 1 MCLK
ASDATA4 — 3 SDTI
XRST — 5 PDN
ADSK — 7 CCLK
ADSOO — 8 CDTI

AOUTL- 11 — 2
AOUTL+ 12 — 3
AOUTR+ 10 — 5
AOUTR- 9 — 6

1
7

R443

Q408
MUTE

R

D402

DZFL 16
DZFR 15

MUTE DRIVER
Q402, Q404, Q405

R435

MAMUTE

R413

12 IC406 1 (CD)

13 IC406 1 (DVD)

44.24ns   3.3Vp-p

40.71ns   3.3Vp-p

A MUTE   SYSTEM CONTROL
(SEE PAGE 3-5 to 3-6)

DVP-NC60P

3-6. VIDEO BLOCK DIAGRAM

MV-045 BOARD
(SEE PAGE 4-11 to 4-12)

IC304

VIDEO BUFFER

MUTE ㉜

⑮ IC304 ㉙

2.5Vp-p
63.5usec

V — ③ VIDEO IN   VIDEO OUT ㉙

J301

COMBO JACK

Y — ⑤ Y IN   Y OUT ㉗

⑭ IC304 ㉗

2.0Vp-p
63.5usec

VIDEO

C — ① C IN   C OUT ㉛

S VIDEO OUT

⑲ IC304 ㉛

1.8Vp-p
63.5usec

SYSTEM CONTROL
(SEE PAGE 3-5 to 3-6)

⑯ MUTE2

Y — ⑧ Y IN   Y OUT ㉕

Cb — ⑪ Cb IN   Cb OUT ㉓

Cr — ⑬ Cr IN   Cr OUT ㉑

Y
Cb
Cr

COMPONENT
VIDEO OUT

⑯ IC304 ㉕

2.0Vp-p
63.5usec

⑱ IC304 ㉑

1.4Vp-p
63.5usec

⑰ IC304 ㉓

1.4Vp-p
63.5usec

3-7. INTERFACE CONTROL BLOCK DIAGRAM

SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM

SWITCHING REGULATOR

MC-154

MV-045 BOARD

IF-127

OPTICAL DEVICE

SE-145

MD-105

SW-443

FR-231

MOTOR

Harness (PM-120) 10P 1-963-311-11
ONLY FOR 5 CHANGER PROGRESSIVE

ONLY FOR 5 CHANGER KARAOKE (PM-124) 10P 1-963-445-11

FFC (FMO-006) 24P 0.5pitch 1-830-286-11

FFC (FIM-008) 23P 1.0 pitch 1-830-273-11

FFC (FIM-009) 5P 1.0 pitch 1-830-274-11

FFC (FIS-004) 11P 1.0 pitch 1-828-878-11

HARNESS 6P (MD-109) 1-963-312-11

HARNESS 11P (FM-100) 1-962-742-11

HARNESS 3P ME-60 1-962-738-11

HARNESS 2P ML-66 1-962-737-11

FFC 6P 1.0 pitch FMS-025 1-828-874-11

TO JIG CN105 2P
1-695-320-91 SB-C7822 HARNESS 1.5mm SMT JST

CN204 TO JIG 6P

10P CNXXX
SW+8V	1
MTR GND	2
EVER+11V	3
EVER+5V	4
SW+3.5V	5
SW+5V	6
GND	7
P-CONT	8
POWER SW	9
EVER-10V	10

10P CN771
SW+8V	1
MTR GND	2
EVER+11V	3
EVER+5V	4
SW+3.3V	5
SW+5V	6
GND	7
P-CONT	8
POWER SW	9
EVER-10V	10

5P CN404
GND_AUDIO	1
AU-10V	2
AU+11V	3
XMIC	4
MIC+ECHO	5

5P CN404
GND_AUDIO	1
AU-10V	2
AU+11V	3
XMIC	4
MIC+ECHO	5

24P CN103
GND (LD)	1
LD (650)	2
N.C	3
N.C	4
PD	5
LD (780)	6
VR (650)	7
VR (780)	8
N.C	9
VoE/etg	10
Vcc	11
Vc	12
GND (PDIC)	13
VoF/fth	14
VoB/b	15
VoA/a	16
RF	17
(LO : DVD, HI : CD) MSW	18
VoD/d	19
VoC/c	20
TRK-	21
TRK+	22
FCS+	23
FCS-	24

24P CN101
GND (LD)	24
LD (650)	23
N.C	22
PD	21
LD (780)	20
VR (650)	19
VR (780)	18
N.C	17
VoE/etg	16
Vcc	15
Vc	14
GND (PDIC)	13
VoF/fth	12
VoB/b	11
VoA/a	10
RF	9
(LO: DVD,HI: CD) MSW	8
VoD/d	7
VoC/c	6
TRK-	5
TRK+	4
FCS+	3
FCS-	2

23P CN401
MTR_GND	1
MTR_GND	2
MTR_GND	3
SW+5V	4
SW+8V	5
SW+8V	6
GND	7
POWER_SW	8
SW-10V	9
A_MUTE	10
EVER+5V	11
PCONT	12
SW+3.3V	13
V_MUTE	14
SCO	15
GND	16
SOO	17
SIO	18
XIFBSY	19
XIFCS	20
3.3_MNT	21
SYSRST	22
GND	23

CN107 1mm Pitch
MTR_GND	23
MTR_GND	22
MTR_GND	21
SW+5V	20
SW+8V	19
SW+8V	18
GND	17
POWER_SW	16
SW-10V	15
XAMUTE	14
EVER+5V	13
P-CONT	12
SW+3.3V	11
XVMUTE	10
SCO	9
GND	8
SOO	7
SIO	6
IFBSY	5
XIFCS	4
3.3V_MNT	3
SYSRST	2
GND	1

6P CN104
SP-	1
SP+	2
LIMIT	3
(GND) LIMIT	4
SL-	5
SL+	6

6P CN201
SP-	6
SP+	5
LIMIT	4
(GND) LIMIT	3
SL-	2
SL+	1

11P CN001
OCSW2	1
OCSW1	2
CKSW1	3
GND	4
SENSOR LED	5
TSENS	6
DSENS	7
LM-	8
LM+	9
TM+	10
TM-	11

11P (B7594) CN404
OCSW1-REV	5
OCSW1-FWD	4
GNDCTL	3
LDM-	2
LDM+	1

CN202 5P
1	OCSW1-REV
2	OCSW1-FWD
3	GNDCTL
4	LDM-
5	LDM+

6P CN204 TO JIG
6	RF MON
5	V2TREFO
4	+3.2V
3	GND
2	RXD
1	TXD

TM- / TM+ / SGND / DSENS / TSENS / SENSOR LED
CN002 6P

CN101 6P
TM-	6
TM+	5
SGND	4
DSENS	3
TSENSD	2
SENSOR LED	1

5P (L3854) CN403
OCSW1-REV / CKSW1-FWD / GNDCTL / LDM- / LDM+

11P (B7594) CN404
OCSW2 / OCSW1 / CKSW1 / GND / SENSOR LED / TSENS / DSENS / LM- / LM+ / TM+ / TM-

3P CN003
OCSW2 / SGND / CKSW1

2P CN004
LM- / LM+

2P CN102
TM+ / TM-

11P (L2758) CN405
PROG LED	1
EVER+3.3V	2
OPEN	3
PLAY	4
STOP	5
IR	6
GND	7
POWER	8
MULTI LED	9
SACD	10
DVD_AUDIO	11

11P (L2758) CN501
PROG LED	11
EVER+3.3V	10
OPEN	9
PLAY	8
STOP	7
IR	6
GND	5
POWER	4
MULTI_LED	3
SACD	2
NC	1

(D5045) 6P CN502
NC	1
SACD	2
MULTI_LED	3
POWER	4
DVD_AUDIO	5
GND	6

(D5045) 6P CN601
NC	6
SACD	5
MULTI_LED	4
POWER	3
DVD_AUDIO	2
GND	1

2P SC_IN (N) / AC_IN (L)

FRAME SCHEMATIC DIAGRAM

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block)

For printed wiring boards:
- ○─── : indicates a lead wire mounted on the component side.
- ●─── : indicates a lead wire mounted on the printed side.
- ○ : Through hole.
- ▭ : Pattern from the side which enables seeing. (The other layers' patterns are not indicated.)

Caution:
Pattern face side: Parts on the pattern face side seen from
(Side A) the pattern face are indicated.
Parts face side: Parts on the parts face side seen from
(Side B) the parts face are indicated.

- Abbreviation
  US : US Model
  CND : Canadian Model

For schematic diagrams:
- All capacitors are in µF unless otherwise noted. pF : µµF. 50V or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/4W (Chip resistors : 1/10W) un-less otherwise specified.
  kΩ = 1000Ω, MΩ = 1000kΩ.
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⊡WW⊡ : non flammable resistor.
- ⊡WW⊡ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repair.
- B+ : B+ Line.
- B− : B− Line.
- Circled numbers refer to waveforms.
- Voltages are dc between measurement point.
- Readings are taken with a color-bar signal on DVD reference disc and when playing CD reference disc.
- Readings are taken with a digital multimeter (DC 10MΩ).
- Voltage variations may be noted due to normal production tolerances.

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

4-3. WAVEFORM

MV-045 BOARD
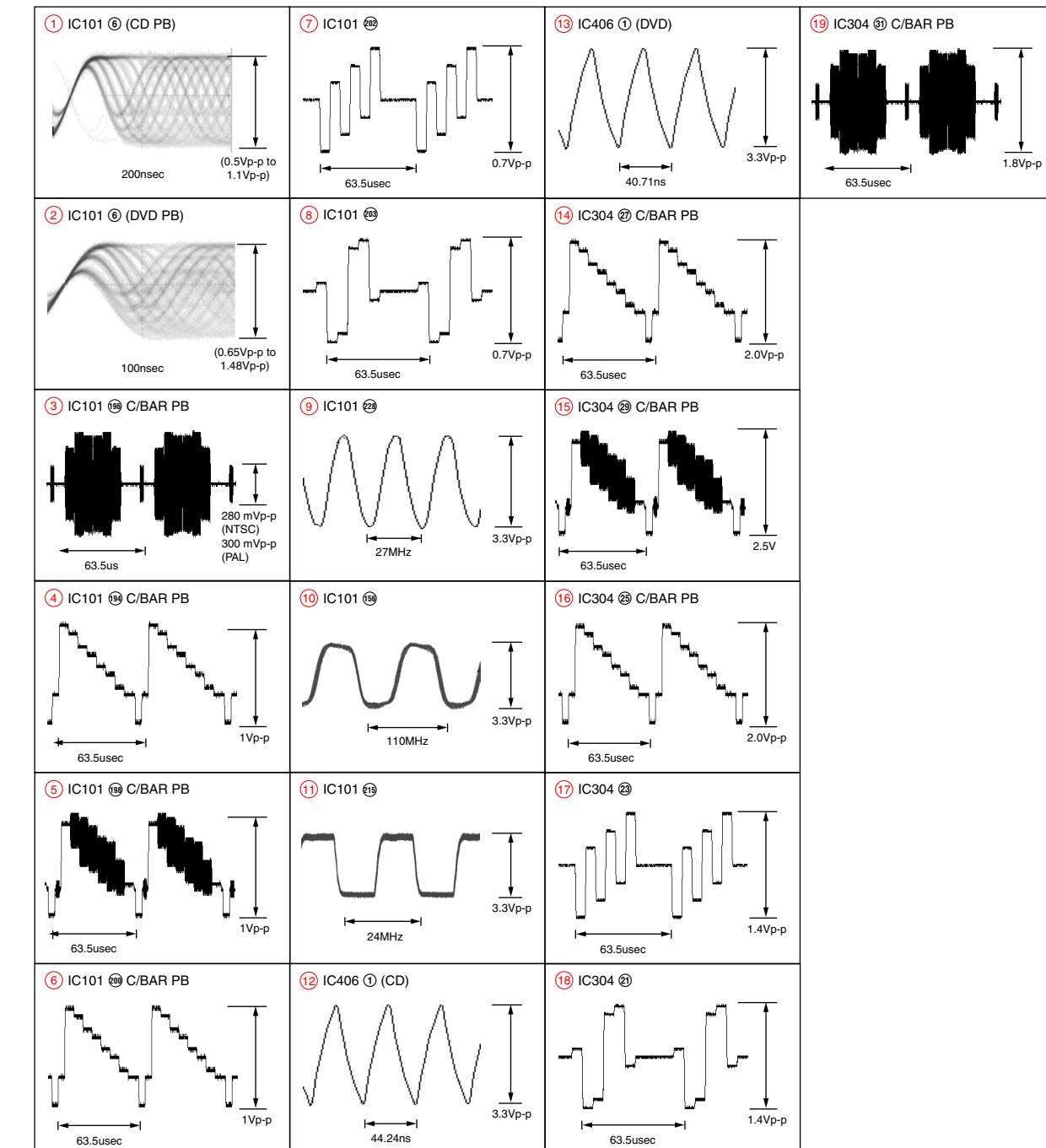
MV-045 (CPU, Servo-DSP, AVDEC, DRIVE, VIDEO, AUDIO, POWER) PRINTED WIRING BOARD

• 🔲 : Uses unleaded solder.

MV-045 BOARD SIDE A
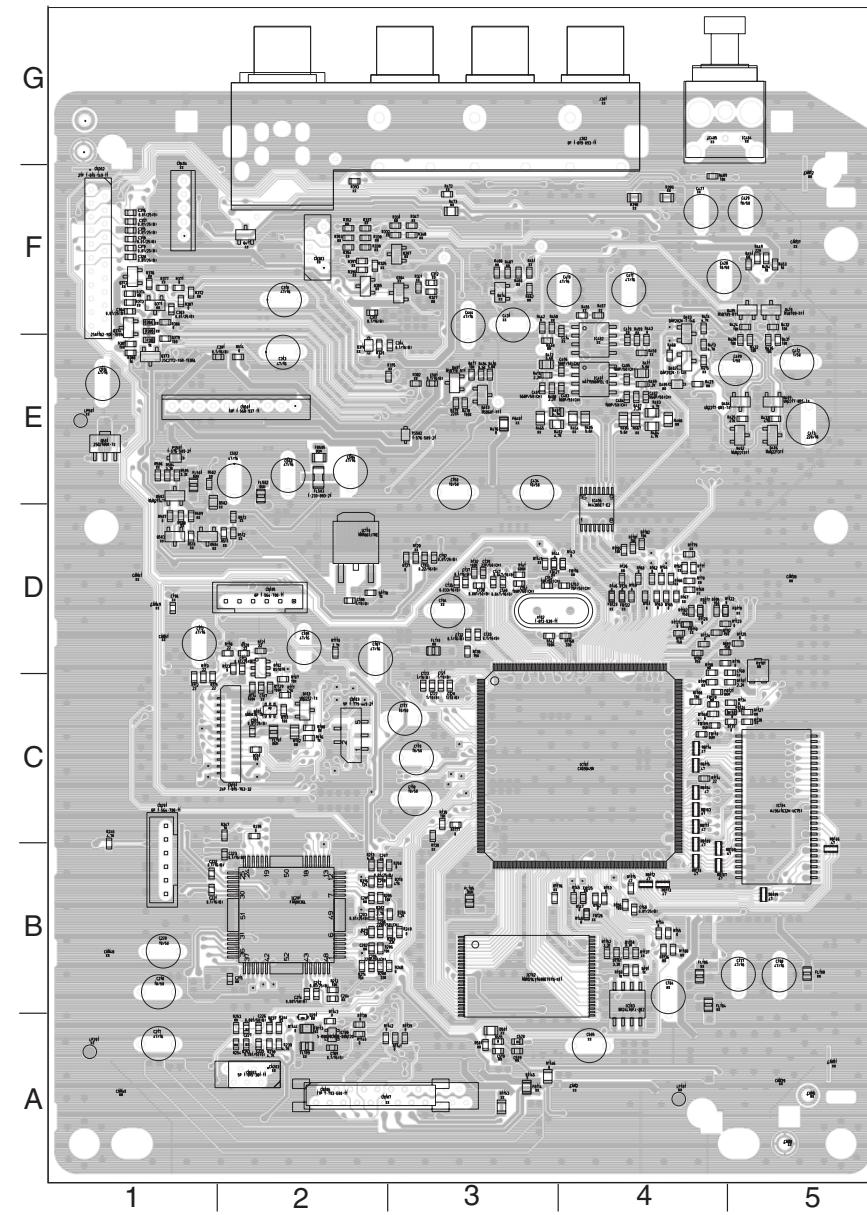
MV-045 BOARD SIDE B
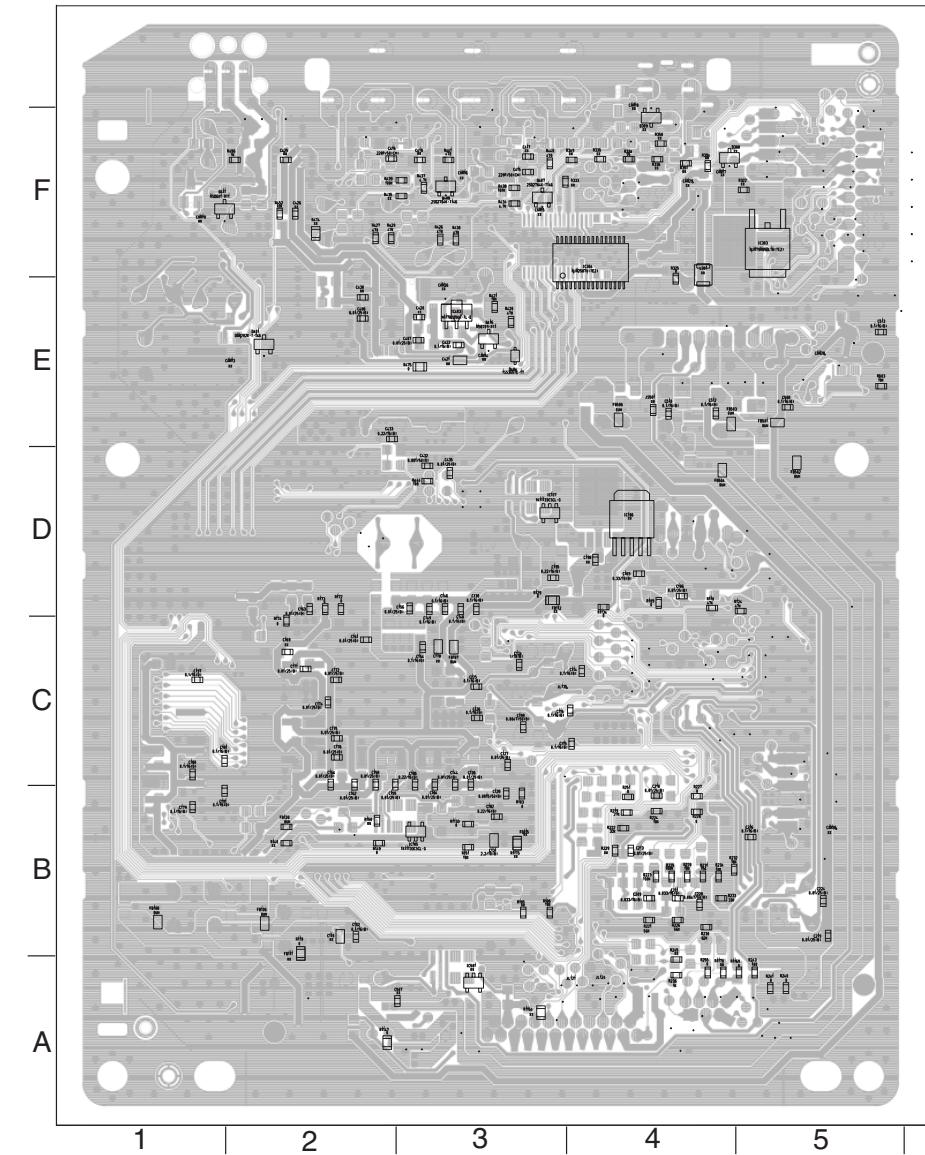
MV-045 BOARD

A SIDE		B SIDE	
IC101	C-4	IC105	B-3
IC102	B-3	IC106	D-4
IC103	B-4	IC107	D-3
IC104	C-5	IC303	F-5
IC108	A-2	IC304	F-4
IC110	D-2	IC403	E-3
IC201	B-2	IC501	A-3
IC401	E-4		
IC402	E-4	Q407	F-3
IC404	G-5	Q408	F-3
IC405	G-4	Q411	F-1
IC406	E-4	Q416	E-3
Q101	C-4	D308	F-4
Q102	D-2	D309	F-4
Q103	C-4	D401	E2
Q304	F-3	D404	E-3
Q305	F-2		
Q307	F-4		
Q371	F-1		
Q372	F-1		
Q373	E-1		
Q374	F-1		
Q401	E-3		
Q402	E-5		
Q403	E-3		
Q404	E-4		
Q405	F-4		
Q406	E-5		
Q409	E-5		
Q410	F-5		
Q414	F-3		
Q417	F-2		
Q501	E-1		
Q502	E-1		
Q503	D-1		
Q504	D-1		
D201	A-2		
D310	E-2		
D501	A-3		
D402	E-4		
D403	F-4		
D405	E-4		
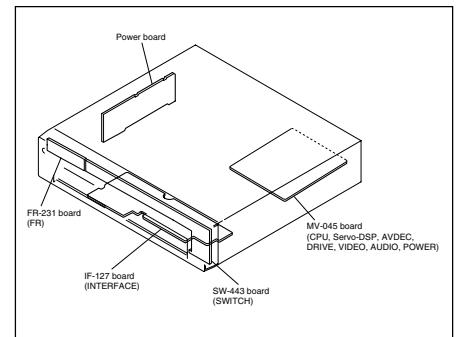
For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.

Power board
FR-231 board (FR)
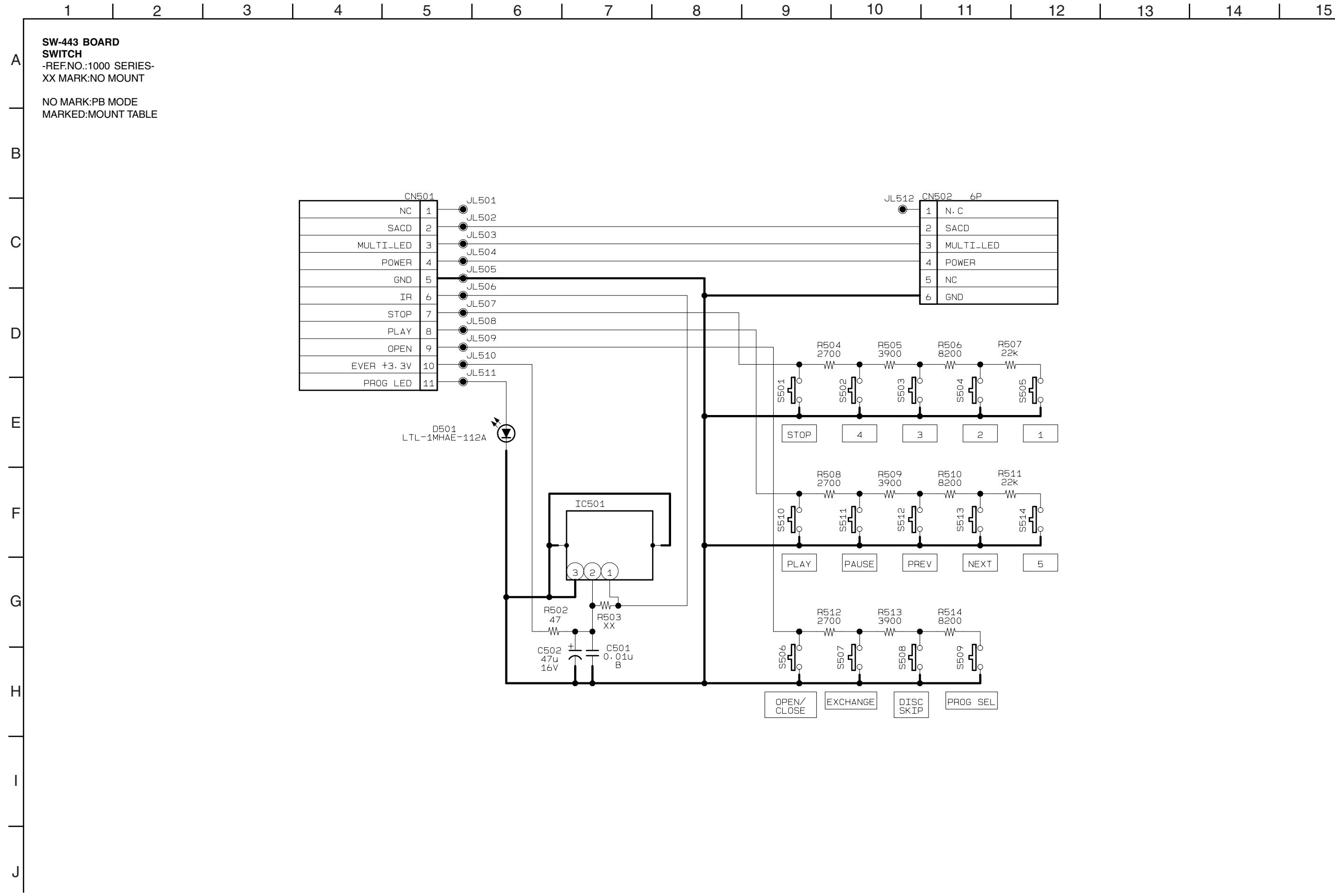IF-127 board (INTERFACE)
SW-443 board (SWITCH)
MV-045 board (CPU, Servo-DSP, AVDEC, DRIVE, VIDEO, AUDIO, POWER)

CPU, Servo-DSP, AVDEC, DRIVE, VIDEO, AUDIO, POWER

MV-045

For Schematic Diagram
• Refer to page 4-5 for printed wiring board of MV-045 board.
• Refer to page 4-4 for waveform

MV-045 BOARD (1/5)
CPU, Servo-DSP, AVDEC
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT

NO MARK:REC/PB MODE

IC101
CXD9849R

CPU, Servo-DSP, AVDEC

MV-045 (1/5)

4-7

4-8

For Schematic Diagram
- Refer to page 4-5 for printed wiring board of MV-045 board.
- Refer to page 4-4 for waveform

MV-045 BOARD (2/5)
DRIVE
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT

NO MARK:REC/PB MODE

4-9

4-10

DRIVE
MV-045 (2/5)

DVP-NC60P

For Schematic Diagram
• Refer to page 4-5 for printed wiring board of MV-045 board.
• Refer to page 4-4 for waveform

MV-045 BOARD (3/5)
VIDEO
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT

NO MARK:REC/PB MODE

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	⇨	⇨	⇨	⇨

VIDEO
MV-045 (3/5)

For Schematic Diagram
• Refer to page 4-5 for printed wiring board of MV-045 board.
• Refer to page 4-4 for waveform

MV-045 BOARD (4/5)
AUDIO
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT

NO MARK:REC/PB MODE

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	⇒	⇒	⇒⟫	⇒

AUDIO
MV-045 (4/5)

For Schematic Diagram
• Refer to page 4-5 for printed wiring board of MV-045 board.
• Refer to page 4-4 for waveform

MV-045 BOARD (5/5)
POWER
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT

NO MARK:REC/PB MODE

*LP501
0valu

CN501 10P

SW+8V	1	JL501
MTR GND	2	JL502
EVER+11V	3	JL503
EVER+5V	4	JL504
SW+3.3V	5	JL505
SW+5V	6	JL506
GND	7	JL507
P-CONT	8	JL508
POWER SW	9	JL509
EVER-10V	10	JL510

C510 0.1u B
JS501 XX

D501 XX
R501 XX
D502 XX
R502 XX
C520 XX B
C519 XX B

IC501 XX
1 CONT   VIN 5
2 GND
3 NOISE VOUT 4
R515 0
C505 XX 16V
C509 XX B

PS501 1.0A
R503 10k
R504 3300
R505 3300
R506 XX

Q501 2SD2185R-TX

Q502 MUN2114T1
R507 0
R508 XX
R509 XX
C514 47u 16V
C513 0.1u B

C512 0.1u B
C508 0.1u B
C501 0.1u B

FB503 0uH
FL502 0uH
FB504 0uH
C503 47u 16V

FB505 0uH
FL503 0valu
FB506 0uH
C504 47u 16V

C502 47u 16V
FB501 0uH
FL501 0uH
FB502 0uH

C507 XX
JL513

Q503 XX
R510 XX
R511 XX
Q504 XX
R512 XX
R513 XX

PS502 1.0A
*R514 0

(P1)

SW+8V
MTR_GND
EVER+5V
SW+3.3V
SW-10V
GND
SW+5V

AU+11V (P4)
VIDEO-5V (P3)
EVER+11V_VID (P3)
EVER+11V (P4)
POWER-SW (IF-124)
P-CONT (IF-124)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

POWER
MV-045 (5/5)

IF-127 (INTERFACE) PRINTED WIRING BOARD

• 🔲 : Uses unleaded solder.

IF-127 BOARD A SIDE
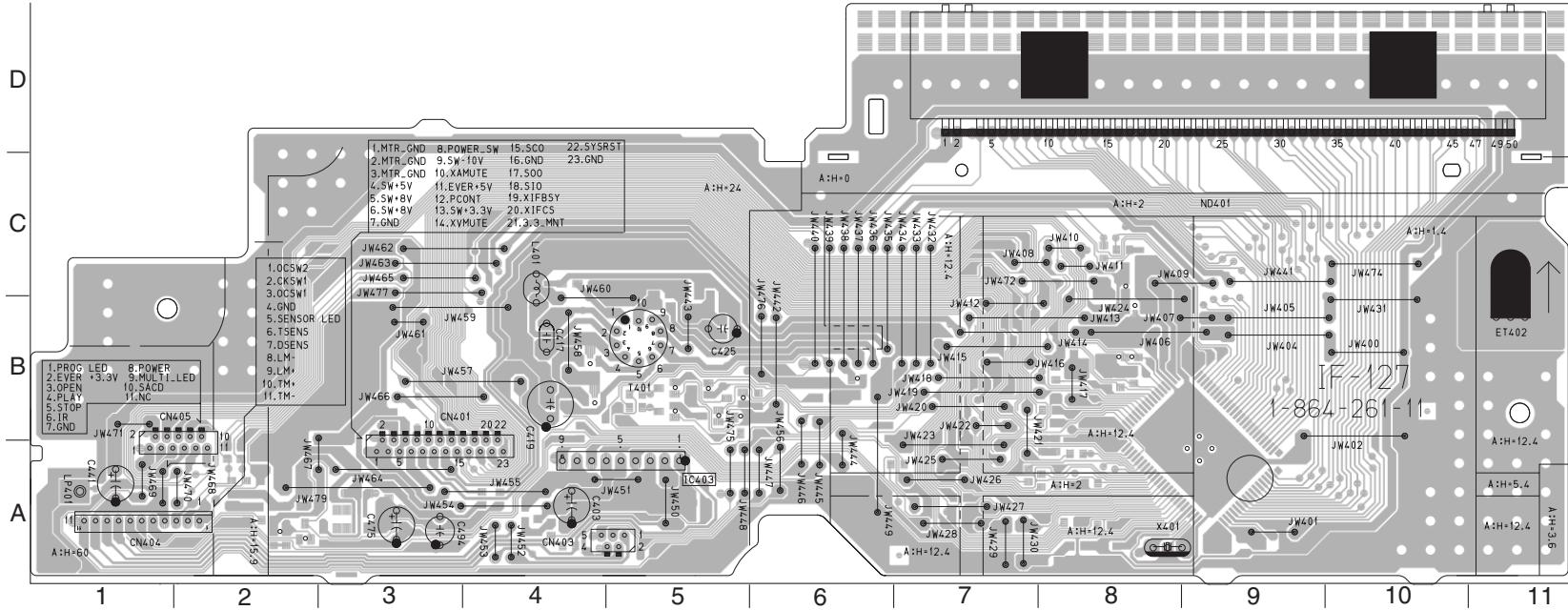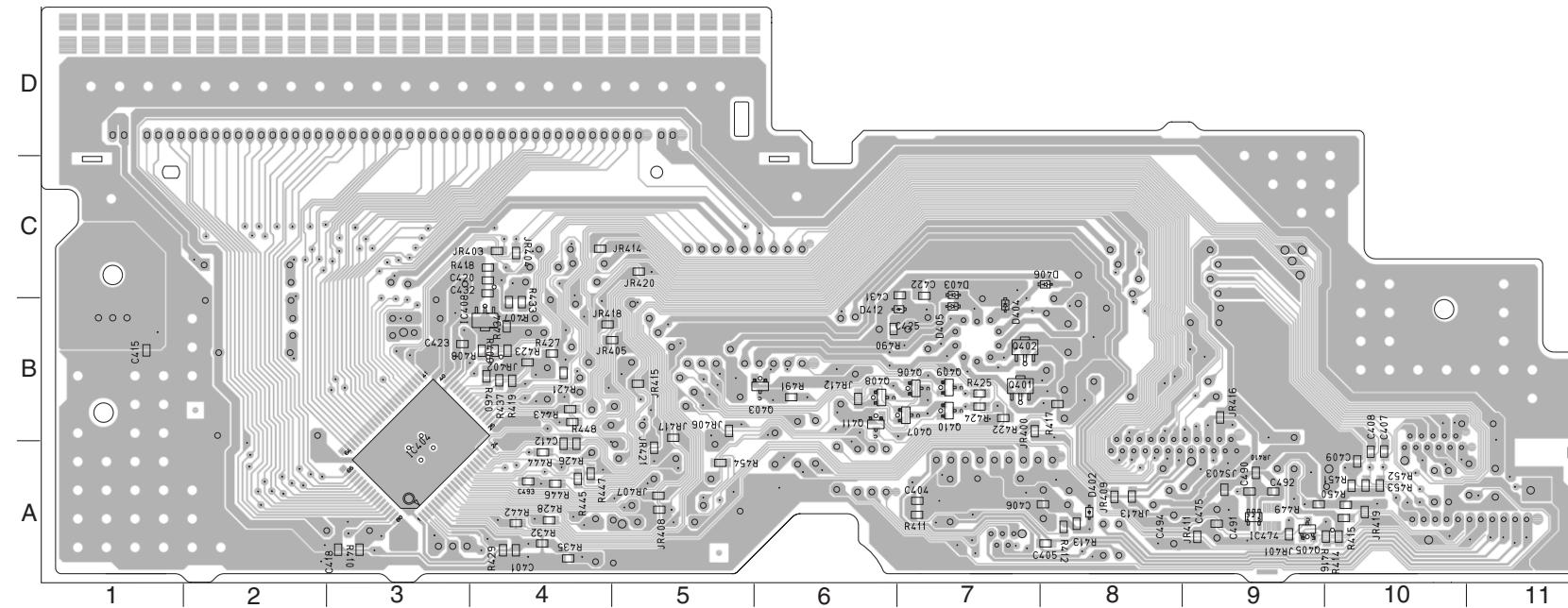
For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.
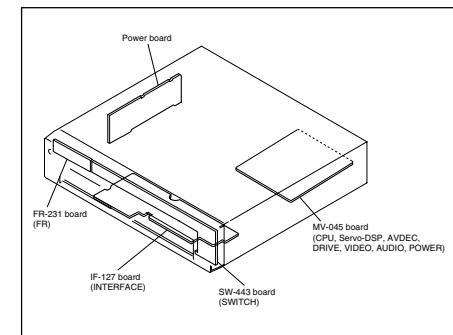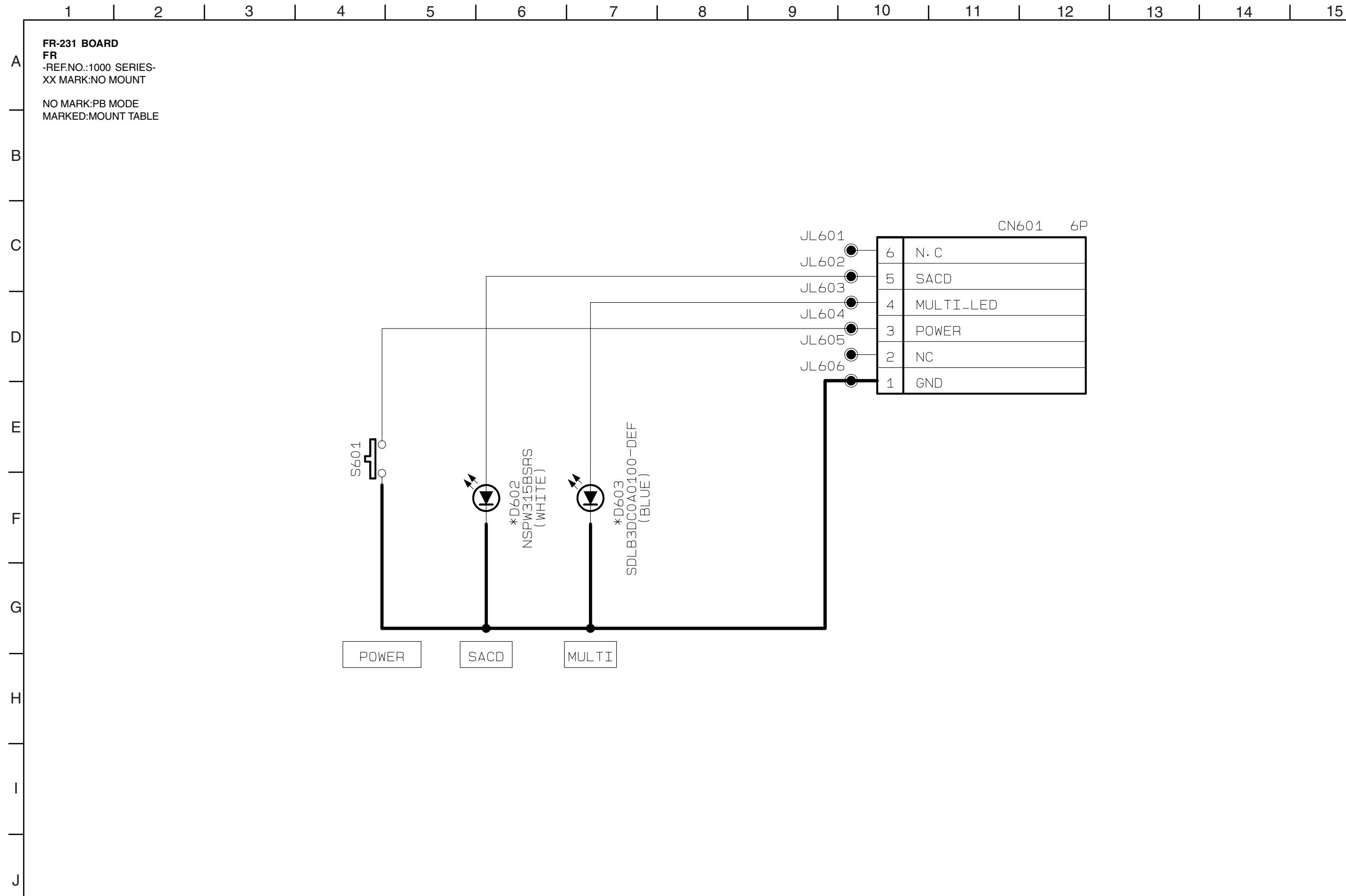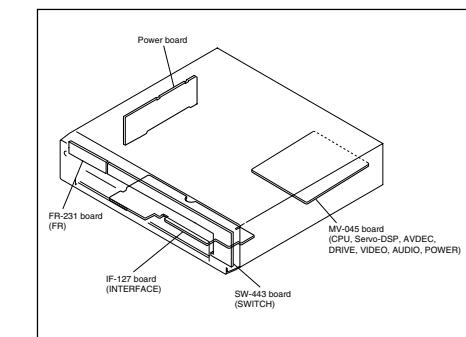

IF-127 BOARD

A SIDE

IC403	A-5

B SIDE

IC404	A-3
IC408	B-3
IC474	A-9
Q401	B-7
Q402	B-7
Q403	B-6
Q405	A-9
Q406	B-7
Q407	B-7
Q408	B-6
Q409	B-7
Q410	B-7
Q411	B-6
D402	A-8
D403	C-7
D404	B-7
D405	B-7
D406	C-8
D412	B-6

IF-127 BOARD B SIDE

INTERFACE

IF-127

DVP-NC60P

For Schematic Diagram

• Refer to page 4-17 for printed wiring board of IF-127 board.

IF-127 BOARD
INTERFACE
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT

NO MARK:PB MODE
MARKED:MOUNT TABLE

INTERFACE

IF-127
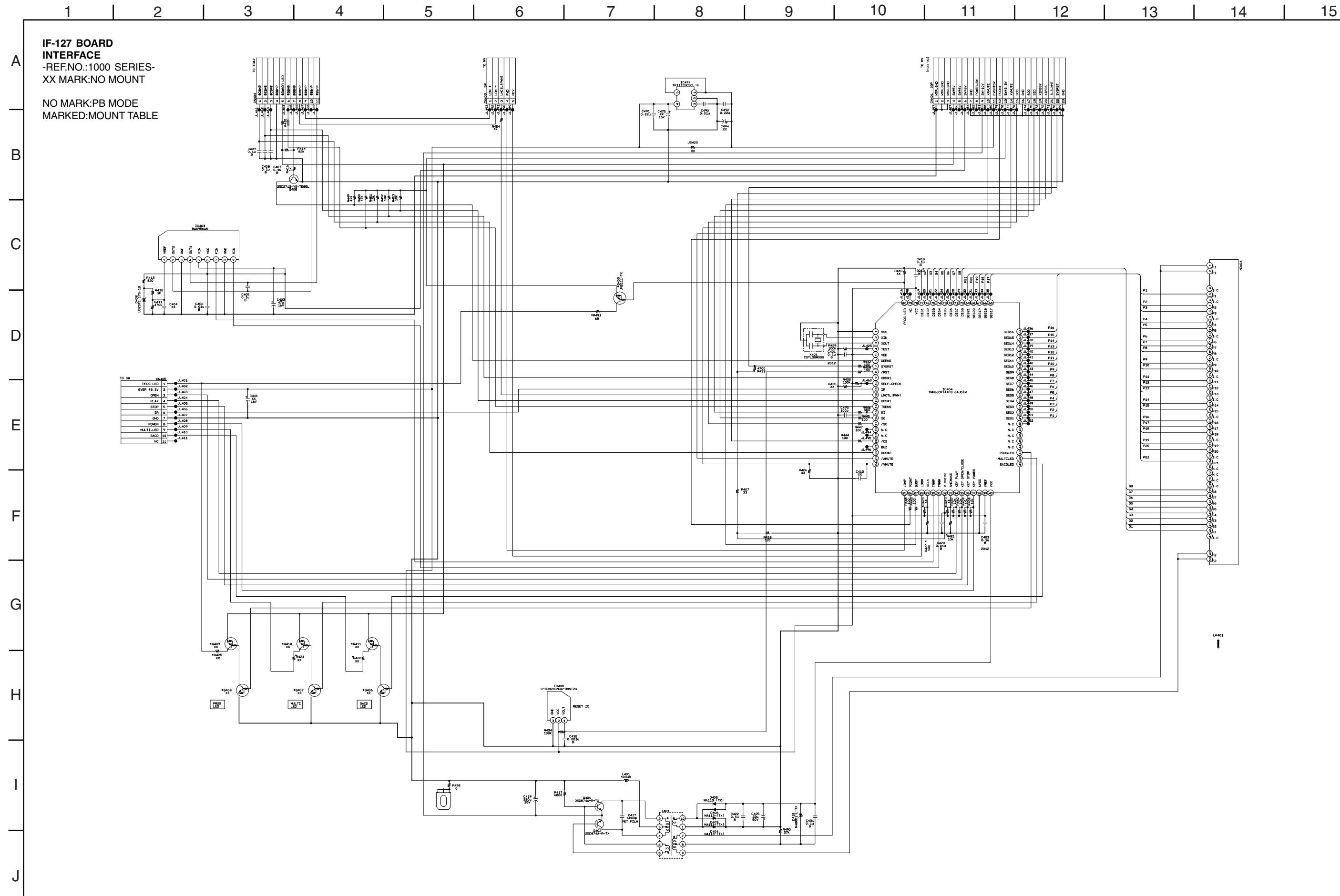
SW-443(SWITCH) PRINTED WIRING BOARD

• ⏚ : Uses unleaded solder.

SW-443 BOARD A SIDE
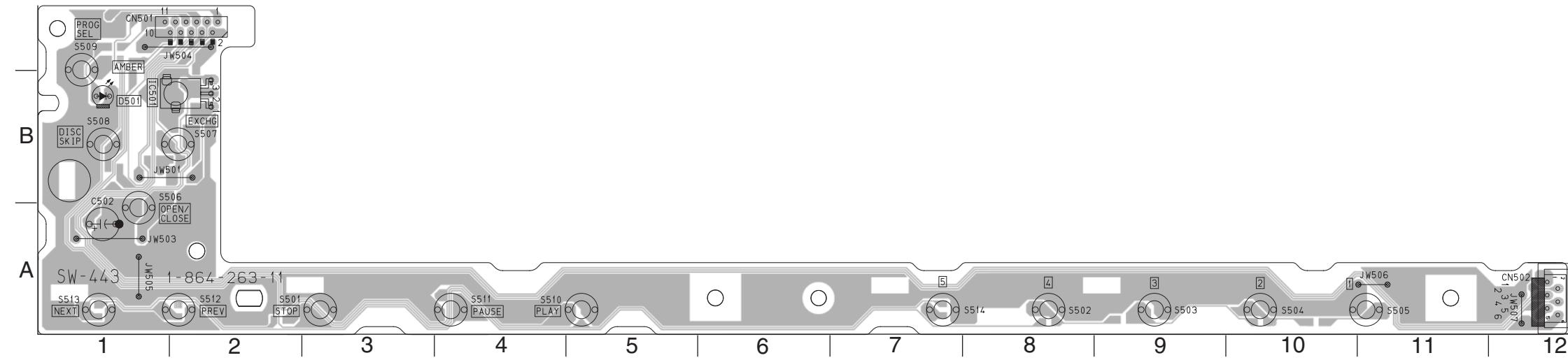
For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.

SW-443 BOARD

A SIDE

IC501   B-1

D501   B-1

SW-443 BOARD B SIDE

SWITCH
SW-443

DVP-NC60P
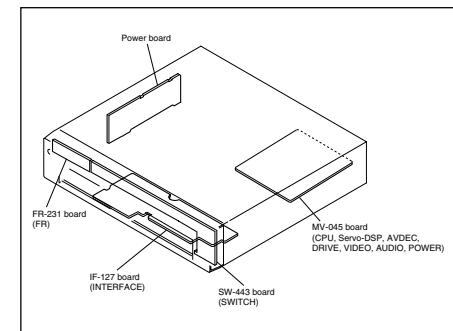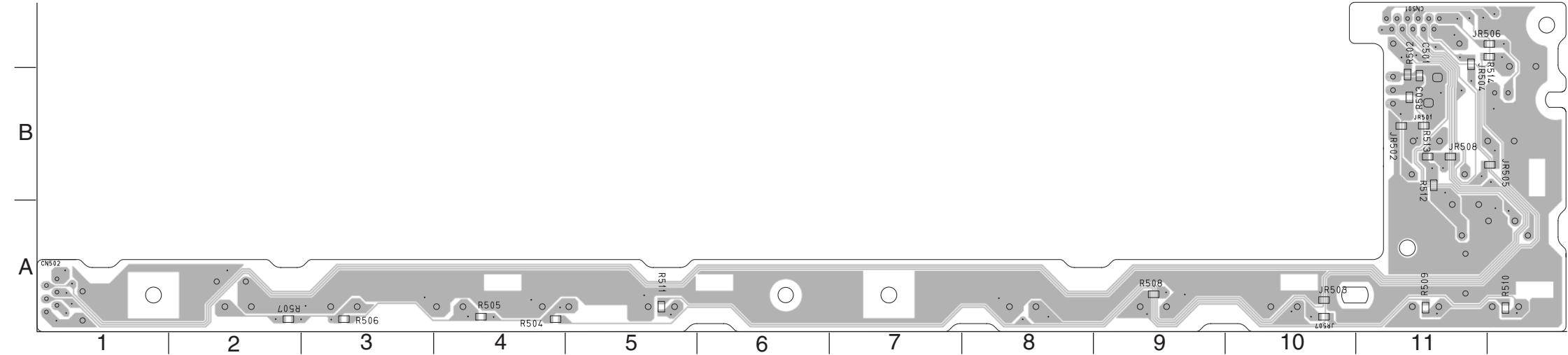
For Schematic Diagram
• Refer to page 4-21 for printed wiring board of SW-443 board.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |

A

SW-443 BOARD
SWITCH
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT

NO MARK:PB MODE
MARKED:MOUNT TABLE

B

C

D

E

F

G

H

I

J

CN501

NC	1
SACD	2
MULTI_LED	3
POWER	4
GND	5
IR	6
STOP	7
PLAY	8
OPEN	9
EVER +3.3V	10
PROG LED	11

JL501
JL502
JL503
JL504
JL505
JL506
JL507
JL508
JL509
JL510
JL511

JL512 CN502 6P

1	N.C
2	SACD
3	MULTI_LED
4	POWER
5	NC
6	GND

D501
LTL-1MHAE-112A

IC501

3 2 1

R502
47

R503
XX

C502
47u
16V

C501
0.01u
B

R504   R505   R506   R507
2700   3900   8200   22k

S501   S502   S503   S504   S505

STOP   4   3   2   1

R508   R509   R510   R511
2700   3900   8200   22k

S510   S511   S512   S513   S514

PLAY   PAUSE   PREV   NEXT   5

R512   R513   R514
2700   3900   8200

S506   S507   S508   S509

OPEN/   EXCHANGE   DISC   PROG SEL
CLOSE   SKIP

SWITCH
SW-443

FR-231 (FR) PRINTED WIRING BOARD

• ⚡ : Uses unleaded solder.

FR-231 BOARD A SIDE
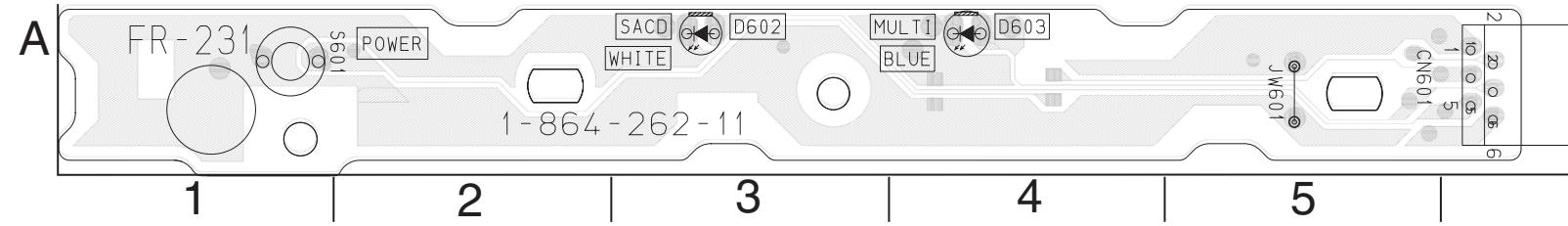
For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.
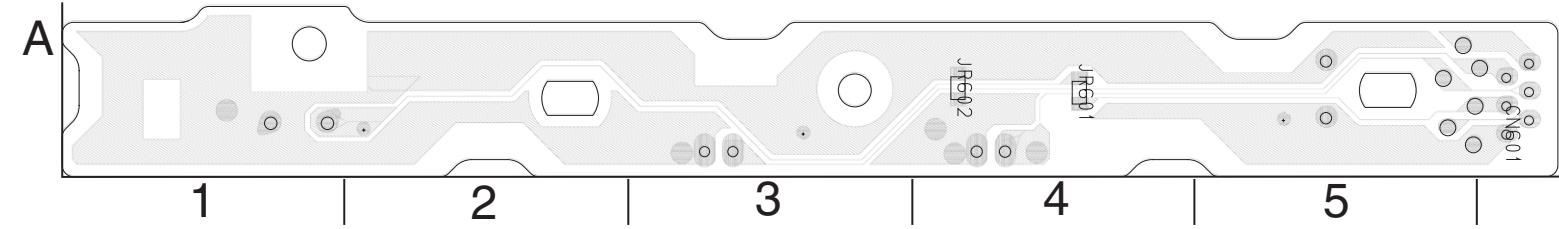
FR-231 BOARD

A SIDE

D602   A-3
D603   A-4

FR-231 BOARD B SIDE

FR
FR-231

DVP-NC60P

For Schematic Diagram

• Refer to page 4-25 for printed wiring board of FR-231 board.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |

A

FR-231 BOARD
FR
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT

NO MARK:PB MODE
MARKED:MOUNT TABLE

B

C

CN601   6P

JL601

6   N.C

JL602

5   SACD

JL603

4   MULTI_LED

JL604

3   POWER

JL605

2   NC

JL606

1   GND

D

E

S601

F

*D602
NSPW315BSRS
(WHITE)

*D603
SDLB3DCOA0100-DEF
(BLUE)

G

| POWER | SACD | MULTI |

H

I

J

FR
FR-231

4-27

4-28

POWER BLOCK (SRV1487UC) PRINTED WIRING BOARD

• ![LF] : Uses unleaded solder.

POWER BOARD (SRV1487UC) (SIDE A)
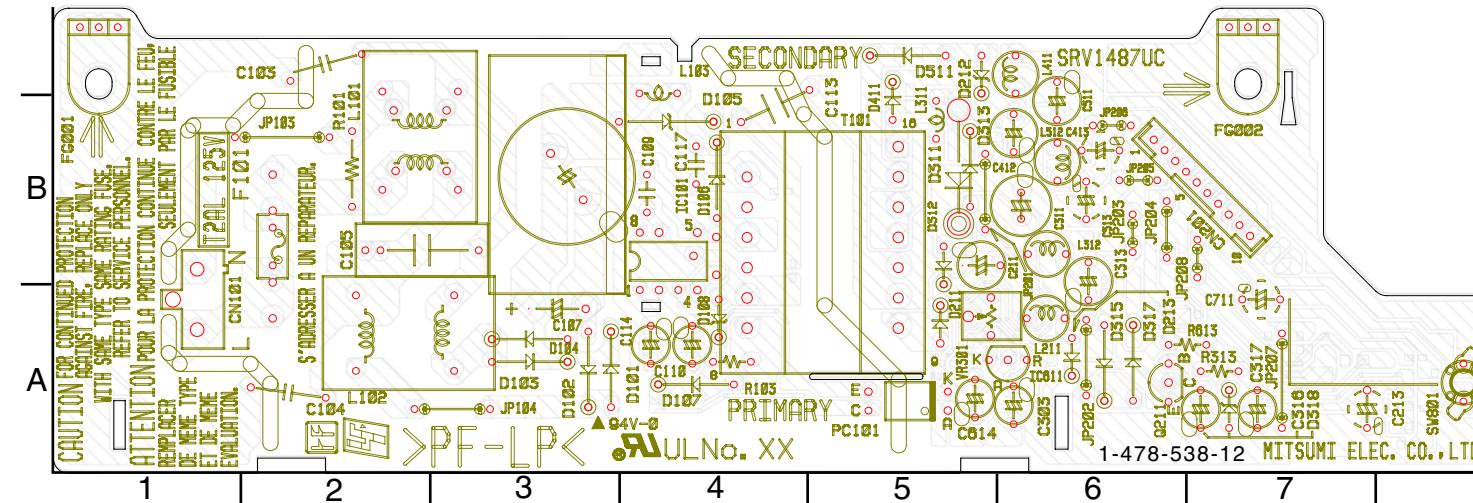
For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.
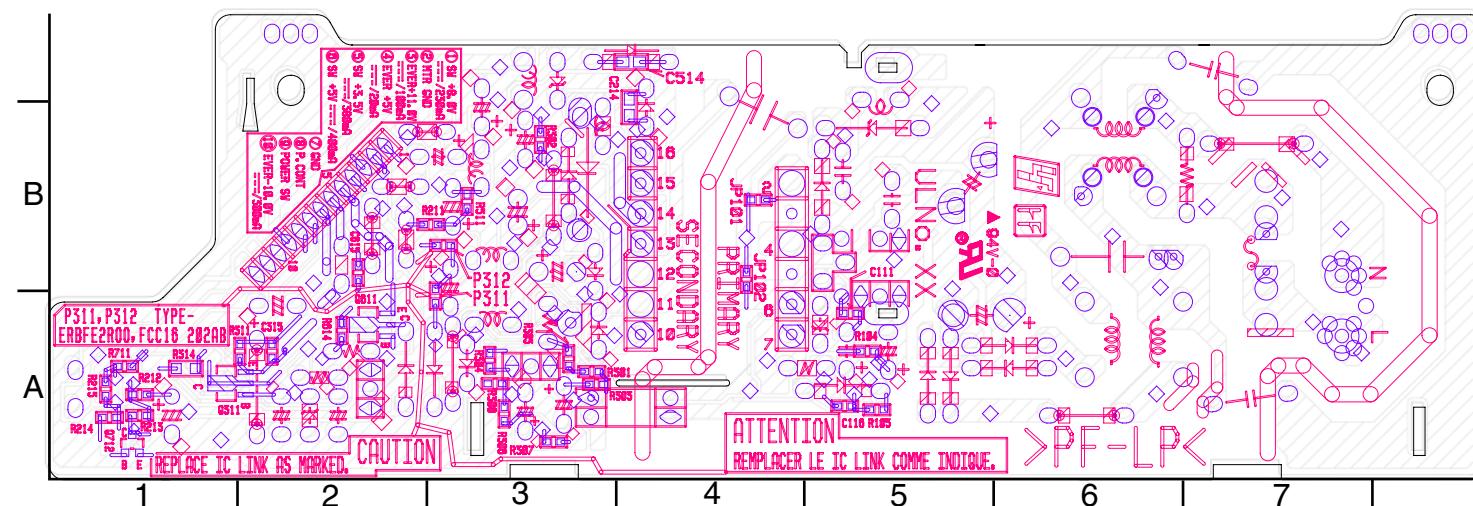
POWER BOARD (SRV1487UC)

A SIDE

IC101	B-4
IC611	A-6
Q211	A-6
D101	A-4
D102	A-3
D103	A-3
D104	A-3
D105	B-4
D106	B-4
D107	A-4
D108	A-4
D211	A-5
D212	C-5
D213	A-6
D311	B-5
D312	B-5
D313	B-5
D315	A-6
D317	A-6
D318	A-7
D411	B-5
D511	C-5

B SIDE

Q311	A-1
Q611	A-2
Q712	A-1

POWER BOARD (SRV1487UC) (SIDE B)

POWER BOARD

POWER BLOCK (SRV1487UC)

DVP-NC60P

For Schematic Diagram
• Refer to page 4-29 for printed wiring board of Power Board.

POWER BOARD
POWER BLOCK (SRV1487UC)
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT

NO MARK:PB MODE
MARKED:MOUNT TABLE

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

POWER BOARD

POWER BLOCK (SRV1487UC)

4-31

4-32E
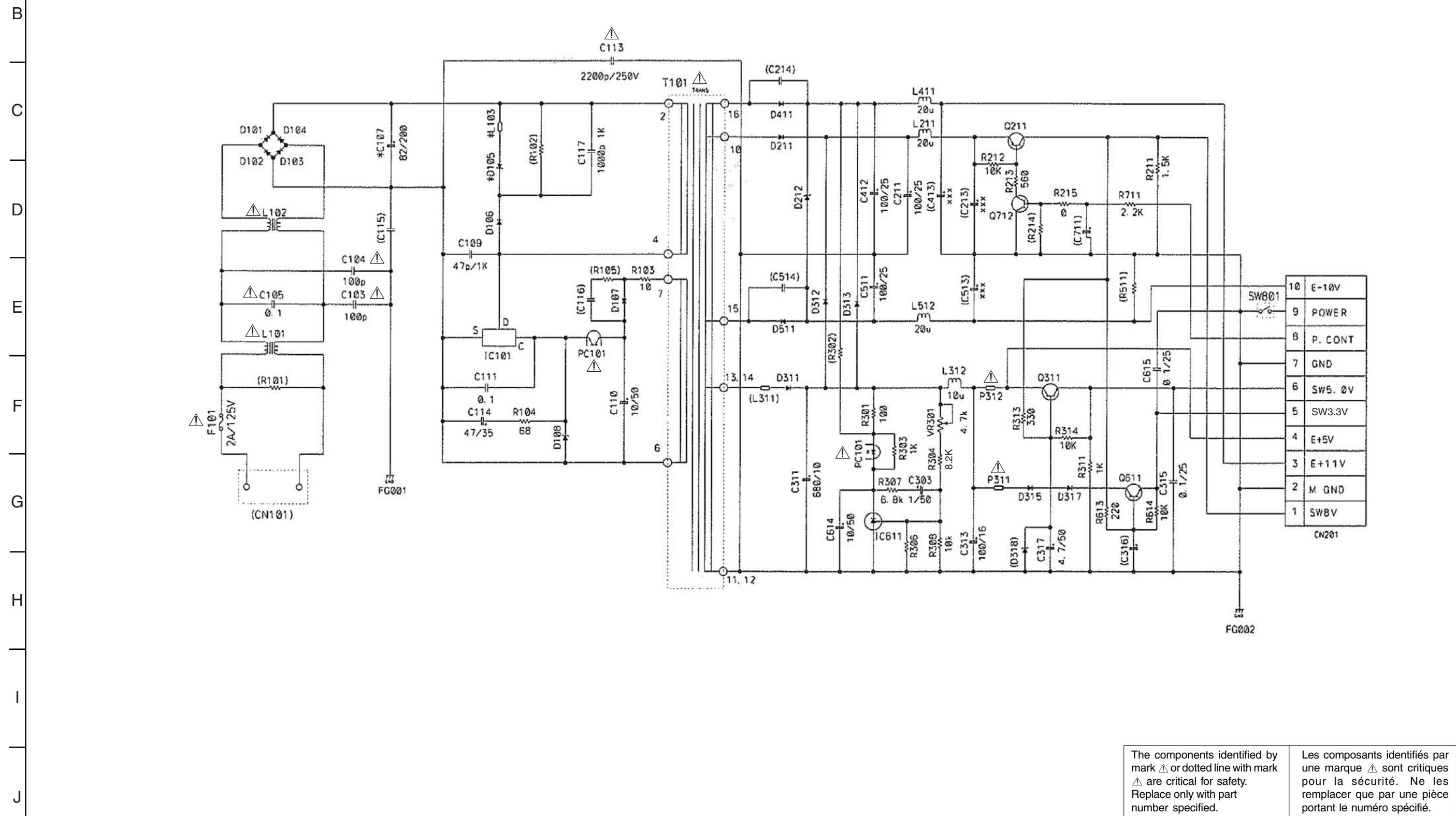
SECTION 5
IC PIN FUNCTION DESCRIPTION

5-1. SYSTEM CONTROL PIN FUNCTION
(MV-045 BOARD IC101)

Pin No.	Pin name	Type	Function
1	AGND		Ground pin for analog circuitry
2	DVDA	Analog Input	AC coupled input path A
3	DVDB	Analog Input	AC coupled input path B
4	DVDC	Analog Input	AC coupled input path C
5	DVDD	Analog Input	AC coupled input path D
6	DVDRFIP	Analog Input	AC coupled DVD RF signal input RFIP
7	DVDRFIN	Analog Input	AC coupled DVD RF signal input RFIN
8	MA	Analog Input	DC coupled main-beam RF signal input A
9	MB	Analog Input	DC coupled main-beam RF signal input B
10	MC	Analog Input	DC coupled main-beam RF signal input C
11	MD	Analog Input	DC coupled main-beam RF signal input D
12	SA	Analog Input	DC coupled sub-beam RF signal input A
13	SB	Analog Input	DC coupled sub-beam RF signal input B
14	SC	Analog Input	DC coupled sub-beam RF signal inputC
15	SD	Analog Input	DC coupled sub-beam RF signal input D
16	SDFON	Analog Input	CD focusing error negative input
17	SDFOP	Analog Input	CD focusing error positive input
18	TNI	Analog Input	3 beam satellite PD signal negative input
19	TPI	Analog Input	3 beam satellite PD signal positive input
20	MDI1	Analog Input	Laser power monitor input
21	MDI2	Analog Input	Laser power monitor input
22	LDO2	Analog Output	Laser driver output
23	LDO1	Analog Output	Laser driver output
24	SVDD3	Power	Analog 3.3V power
25	CSO	Analog Output	Central servo
26	RFLVL	Analog Output	RFRP low pass output
27	SGND	Ground	Ground pin for analog circuitry
28	V2REFO	Analog Output	Reference voltage 2.8V
29	V20	Analog Output	Reference voltage 2.0V
30	VREFO	Analog Output	Reference voltage 1.4V
31	FEO	Analog Output	Focus error monitor output
32	TEO	Analog Output	Tracking error monitor output
33	TEZISLV	Analog Output	TE Slicing Level
34	OP_OUT	Analog Output	OP amp output
35	OP_INN	Analog Input	OP amp negative input
36	OP_INP	Analog Input	OP amp positive input
37	DMO	Analog Output	Disc motor control output.PWM output
38	FMO	Analog Output	Feed motor control. PWM output
39	TROPENPWM	Analog Output	Tray PWM output/Tray open output
40	IOPMON	Analog Input	General A/D input -> IOP Monitor
41	TRO	Analog Output	PDM output of tracking servo compensator
42	FOO	Analog Output	PDM output of focus servo compensator
43	USB_VSS	Ground	Ground pin for USB
44			Not used
45			Not used
46	USB_VDD3	Power Input LVTTL	3.3V power pin for USB
47	SPFG	3.3 V, SMT,PU	General A/D input -> Iop Monitor
48	MSW	Analog Output	Servo GPIO 8
49	CKSW	Analog Input	Servo GPIO 2

Pin No.	Pin name	Type	Function
50	OCSW	Input	Servo GPIO 1
51	EEWP	Output	EEPROM write Protect Control
52	DVDD18	Power	1.8V power pin for internal digital circuitry
53	HA2	Output PU	Host address bit2
54	HA3	Output PU	Host address bit3
55	HA4	Output PU	Host address bit4
56	HA5	Output PU	Host address bit5
57	HA6	Output PU	Host address bit6
58	HA7	Output PU	Host address bit7
59	HA8	Output PU	Host address bit8
60	HA18	Output SMT	Host address bit18
61	HA19	Output SMT	Host address bit19
62	DVSS	Ground	Ground pin for internal digital circuitry
63	APLLCAP	Analog Input	APLL External Capacitance connection
64	APLLVSS	Ground	Ground pin for audio clock circuitry
65	APLLVDD3	Power	3.3V power for audio clock circuitry
66	xWR	Output SMT	Write enable, active Low
67	HA16	Output	Host address bit16
68	HA15	Output PU	Host address bit15
69	HA14	Output PU	Host address bit14
70	HA13	Output PU	Host address bit13
71	HA12	Output PU	Host address bit12
72	HA11	Output PU	Host address bit11
73	DVDD3	Power	3.3V power pin for internal digital circuitry
74	HA10	Output PU	Host address bit10
75	HA9	Output PU	Host address bit9
76	HA20	Output SMT	Host address bit20
77	xROMCS	Output PU, SMT	Chip select, active Low
78	HA1	Output PU	Host address bit1
79	xRD	Output SMT	Read enable, active Low
80	DVDD3	Power	3.3V power pin for internal digital circuitry
81	HD0	Output	Host data bit0
82	HD1	Output	Host data bit1
83	HD2	Output	Host data bit2
84	HD3	Output	Host data bit3
85	DVSS	Ground	Ground pin for internal digital circuitry
86	HD4	Output	Host data bit4
87	HD5	Output	Host data bit5
88	HD6	Output	Host data bit6
89	HA21	Output SMT	Host data bit21
90	ALE	Output PU,SMT	Address latch enable
91	HD7	Output	Host data bit7
92	HD17	Output	Host address bit17
93	HA0	Output PU	Host address bit0
94	DVSS	Ground	Ground pin for internal digital circuitry
95	UWR#	Output PU,SMT	8032 write strobe
96	URD#	Output PU,SMT	8032 read strobe
97	DVDD18	Power	1.8V power pin for internal digital circuitry
98	IFSDO	Output PU,SMT Default High	Ext. CPU Serial data output (H/W method)
99	IFCK	Output PU,SMT Default High	Ext. CPU Serial clock (H/W method)
100	xIFCS	Output PU,SMT Default High	Chip select for Ext.CPU (Low Active, H/W method)

Pin No.	Pin name	Type	Function
101	IFSDI	Input SMT Output PU,SMT	Ext. CPV Serial data Input
102	SCL	Default High Output PU,SMT	IIC clock pin
103	SDA	Default High Output PU,SMT	IIC data pin
104	UP3_0	Default High	8032 GPIO
105	IFBSY	Int PU,SMT	Ext. CPU Ready/Busy interrupt signal (H: Busy, L: Ready)
106	RXD	Input PU,SMT Output PU,SMT	Hardwired RS232C RXD
107	TXD	Default High	Hardwired RS232C TXD
108	DVDD3	Power	3.3V power pin for internal digital circuitry
109	ICE	Output PU,SMT	Ice mode enable
110	xSYSRST	Input PU,SMT	MT1389 reset input, active Low
111	IR	Input SMT	IR control signal input
112	INT0#	Input PU,SMT	8032 external interrupt 0 (for ICE)
113	DQM0	Output Output Default	Mask for DRAM input/output byte 0
114	GPIO	Low	GPIO
115	RD7	Output	DRAM data bit7
116	DVSS	Ground	Ground pin for internal digital circuitry
117	RD6	Output	DRAM data bit6
118	RD5	Output	DRAM data bit5
119	DVSS	Ground	Ground pin for internal digital circuitry
120	RD4	Output	DRAM data bit4
121	RD3	Output	DRAM data bti3
122	DVDD18	Power	1.8V power pin for internal digital circuitry
123	RD2	Output	DRAM data bit2
124	RD1	Output	DRAM data bit1
125	RD0	Output	DRAM data bit0
126	RD15	Output	DRAM data bit15
127	DVDD3	Power	3.3V power pin for internal digital circuitry
128	RD14	Output	DRAM data bit14
129	RD13	Output	DRAM data bit13
130	RD12	Output	DRAM data bit12
131	RD11	Output	DRAM data bit11
132	RD10	Output	DRAM data bit10
133	RD9	Output	DRAM data bit9
134	DVSS	Ground	Ground pin for internal circuitry
135	RD8	Output Output Default	DRAM data bit8
136	RGBSEL	Low	RGB/YCBCR select output signal (H: RGB Disable, L: RGB)
137	DQM1	Output	Mask for DRAM input/output byte 1
138	RWE#	Output	DRAM write enable
139	CAS#	Output	DRAM columm address strobe
140	RAS#	Output	DRAM row address strobe
141	DVDD3	Power	3.3V power pin for internal digital circuitry
142	RCS#	Output	DRAM chip select
143	BA0	Output	DRAM bank address 0
144	DVSS	Ground	Ground pin for internal digital circuitry
145	BA1	Output	DRAM bank address 1
146	RA10	Output	DRAM address bit10
147	RA0	Output	DRAM address bit0
148	DVSS	Ground	Ground pin for internal digital circuitry
149	RA1	Output	DRAM address bit1

DVP-NC60P

Pin No.	Pin name	Type	Function
150	RA2	Output	DRAM address bit2
151	RA3	Output	DRAM address bit3
152	DVDD18	Power	1.8V power pin for internal digital circuitry
153	RVREF	Analog Input	Reference voltage for DDR DRAM
154	RCLKB	Output	DRAM clock invert
155	DVDD3	Power	3.3V power pin for internal digital circuitry
156	DRCLK	Output	DRAM clock
157	CKE	Output	DRAM clock enable
158	RA11	Output PD	DRAM address bit11
159	RA9	Output	DRAM address bit9
160	RA8	Output	DRAM address bit8
161	DVSS	Ground	Ground pin for internal digital circuitry
162	RA7	Output	DRAM address bit7
163	DVSS	Ground	Ground pin for internal digital circuitry
164	RA6	Output	DRAM address bit6
165	RA5	Output	DRAM address bit5
166	RA4	Output	DRAM address bit4
167	DVDD3	Power	3.3V power pin for internal digital circuitry
168	FWD	Output PD	Servo GPIO 6
169	REV	Output PU	Servo GPIO 7
170	MUTE123	Output PD	Servo GPIO 5
171			Not used
172			Not used
173	DVDD18	Power Output Default	1.8V power pin for internal digital circuitry
174	MUTE	Output PD	Servo GPIO 4
175			Not used
176	XMAMUTE	Default LOW	Main Audio Mute Signal (H: Unmute, L: Mute)
177	DSEL	Output	Interlace/Prog select output signal (H: 480i, L:480P)
178	TSD_M	Input PU	SERVO GPIO 3
179	EUROVY	Output PU	CVBS/S terminal select output signal (H: CBVS, L: S-Terminal)
180			Not used
181			Not used
182	DVDD3	Power	3.3V power pin for internal digital circuitry
183			Not used
184			Not used
185			Not used
186			Not used
187			Not used
188			Not used
189	DACVDDC	Power	3.3V power for Video DAC circuitry
190	VREF	Analog Input	Bandgap Ref Voltage (No connect)
191	FS	Analog Input	Full Scale Adjustment Compensation capacitor
192	CIN/YUV0	Output	Video data output bit0
193	DACVDDC	Ground	Ground pin for Video DAC circuitry Analog Y output
194	Y/YUV1	Output	Video data output bit1
195	DACVDDB	Power	3.3V power for Video DAC circuitry Analog chroma output
196	C/YUV2	Output	Video data output bit2
197	DACVSSB	Ground	Ground pin for Video DAC circuitry Analog composite output
198	CVBS/YUV3	Output	Video data output bit3

Pin No.	Pin name	Type	Function
199	DACVDDA	Power	3.3V power for Video DAC circuitry Green or Y
200	YG/YUV4	Output	Video data output bit4
201	DACVSSA	Ground	Ground pin for Video DAC circuitry Blue or Cb
202	B/Cb/Pb YUV5	Output	Video data output bit5 Red or Cr
203	R/Cr/Pr YUV6	Output	Video data output bit6
204	DVDD3	Power	3.3V power pin for Video DAC digital circuitry
205	MIC	Input SMT	Karaoke Microphone detect signal
206	YUV7	Output SMT	Video data output bit7
207	KRMOD	Output SMT Output Default	Karaoke Mode Status Output (H: Normal, L: Karaoke)
208	SCK	Output	ADAC Serial Clock
209	WIDE	Output Output Default	Voltage select Output signal for S terminal (H: 16:9, L:4:3)
210	SDO	Output	ADAC Serial data output
211	xSCS	High	Chip select for ADAC
212	DVDD3	Power	3.3V power pin for internal digital circuitry
213	ALRCK	Output PD,SMT	Audio left/right channel clock
214	ABCK	Output	Audio Bit Clock output
215	ACLK	Output	Master clock output for Audio DAC
216	DVSS	Ground	Ground pin for internal digital circuitry
217			Not used
218			Not used
219			Not used
220	xRST	Default Low	Reset output signal for ADAC (Low Active)
221	DVDD18	Power	1.8V power pin for intenal digital circuitry
222	ASDATA4	Output PD,SMT	Audio serial data 4: Down-mixed L/R
223	DVSS	Ground	Ground pin for internal digital circuitry
224	D-WIDE	Input	Video aspect ratio control for D-terminal. (H: 16:9, L: 4:3)
225	SPDIF	Output	SPDIF output
226	RFGND18	Ground	Ground pin for internal analog circuitry
227	RFVDD18	Power	1.8V power pin for internal analog circuitry
228	XTALO	Output	27M crystal output
229	XTALI	Input	27M crystal input
230	JITFO	Analog Output	The output terminal of RF jitter meter
231	JITFN	Analog Input	The input terminal of RF jitter meter
232	PLLVSS	Ground	Ground pin for data PLL and related analog circuitry
233	IDACEXLP	Analog Output	C input
234	PLLVDD3	Power	3.3V power pin for data PLL and related analog circuitry
235	LPFON	Analog Output	The negative output terminal of loop filter amplifier
236	LPFIP	Analog Input	The positive input terminal of loop filter amplifier
237	LPFIN	Analog Input	The negative input of loop filter amplifier
238	LPFOP	Analog Output	The positive output of loop filter amplifier
239	ADCVDD3	Power	Power pin for ADC circuitry
240			Not used
241	ADCVSS	Ground	Ground pin for ADC circuitry
242			Not used
243			Not used
244	RFVDD3	Power	3.3V power pin for RF digital circuitry
245	RFRPDC	Analog Output	RF ripple detect output
246	RFRPAC	Analog Input	RF ripple detect input (through AC-coupling)
247	HRFZC	Analog Input	High frequency RF ripple zero crossing
248	CRTPLP	Analog Output	Defect level filter capacitor connecting

DVP-NC60P

Pin No.	Pin name	Type	Function
249	RFGND	Ground	Ground pin for RF digital circuitry
250			Not used
251			Not used
252	OSP	Analog Output	RF Offset cancellation capacitor connecting
253	OSN	Analog Output	RF Offset cancellation capacitor connecting
254	RFGC	Analog Output	RF AGC loop capacitor conecting for DVD-ROM
255	IREF	Analog Input	Current reference input
256	AVDD3	Power	3.3V power pin for analog circuirtry

SECTION 6
TEST MODE

6-1. EXECUTING IOP MEASUREMENT

In order to execute IOP measurement, the following standard procedures must be followed.

(1)   In standby mode, press TOP MENU , CLEAR , POWER to enter Remocon Diagnosis Mode.

```
        Remocon Diagnosis Menu

0. External Chip Check
1. Servo Parameter Check
2. Drive Manual Operation
3. Emergency History Check
4. Version information
5. Video Level Adjustment


Model      : xxx xxx xxx
IF-con Ver : xxx
Syscon Ver : xxx
```
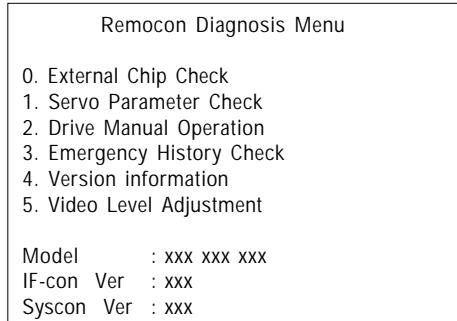
(2)   Select "2. Drive Manual Operation" by pressing the 2 key on the remote commander. The screen will appear as below.

```
        Drive Manual Operation

1. Servo Control
2. Track/Layer Jump
3. Manual Adjustment
4. Tray Aging Mode
5. MIRR time adjust
0. Return to top Menu
```
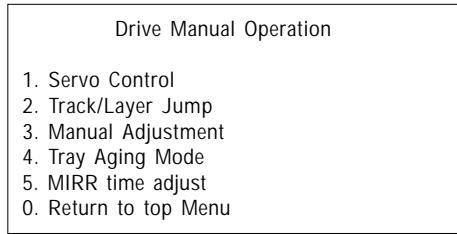
(3)   Select "3. Manual Adjustment" by pressing the 3 key on the remote commander. The screen will appear as below.

```
           Manual Adjust

1. Track Balance Adjust:
2. Track Gain Adjust:
3. Focus Balance Adjust:
4. Focus Gain Adjust:
5. Eg boost Adjust:
6. Iop:
7. TRV. Level:
8. S curve(FE) Level:
9. RFL(PI) Level:
0. MIRR Time:

?  ? Change Value
RETURN  Return to previous menu
```
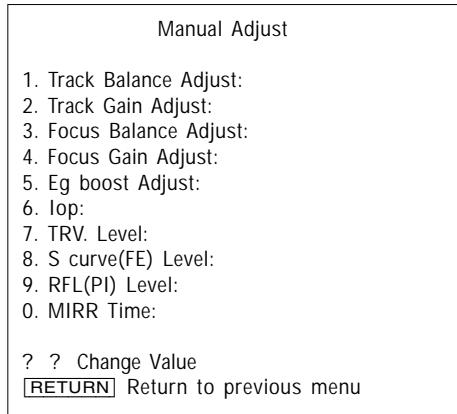
(4)   Select Iop by pressing 6 key on the remote commander.

(5)   Wait until a hexadecimal number appear.

```
           Manual Adjust

1. Track Balance Adjust:
2. Track Gain Adjust:
3. Focus Balance Adjust:
4. Focus Gain Adjust:
5. Eq Boost Adjust:
6. Iop ED:
7. TRV. Level:
8. S curve(FE) Level:
9. RFL(PI) Level:
0. MIRR Time:

Change Value
0  Return to previous menu
```
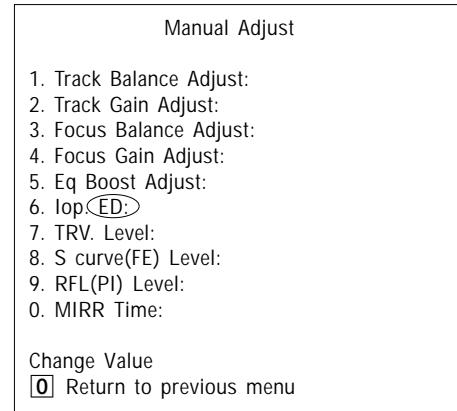
(6)   Convert data from hexadecimal to decimal.

(7)   Use the following formula to calculate IOP in mA
IOP (mA)=IOP (decimal) x 0.622678.

(8)   Press RETURN to return back to previous menu.

(9)   Press 0 to return to Top Menu and power OFF the DVD Player.

6-2. EMERGENCY HISTORY CHECK

Information of Emergency History.

(1)   In standby mode, press TOP MENU , CLEAR , POWER to enter Remocon Diagnosis Mode.

(2)   Select "3. Emergency History".

```
       Emg. History Check

Laser Hours    CD    999h  59min
               DVD   999h  59min

1. 01 05 04 04        00 92 46 00
   00 00 00 00        00 00 23 45

2. 02 02 01 01        00 A9 4B 00
   00 00 00 00        00 00 23 45
```

Next Next Page Prev Prev Page

(3)   Laser Hours
DVD Laser ON time. (Total ON time)
CD Laser ON time. (Total ON time)

(4)   Emergency History
The history information from last "1" to "10" can be scrolled with NEXT key or PREV key.

(5)   Error code

```
       Example of Error code

1. 01 05 04 04        00 92 46 00
   00 00 00 00        00 00 23 45
```

(6) Error code list
01: Communication error (No reply from syscon)
02: Syscon hung up
03: Power OFF request when syscon hung up
19: Thermal shutdown
24: MoveSledHome error
25: Mecha move error (5 Changer)
26: Mecha move stack error
30: DC Motor adjustment error
31: DPD offset adjustment error
32: TE Balance adjustment error
33: TE Sensor adjustment error
34: TE loop gain adjustment error
35: FE loop gain adjustment error
36: Bad jitter after adjustment
40: Focus NG
42: Focus Layer Jump NG
52: Open kick spindle error
51: Spindle stop error
60: Focus on error
61: Seek fail error
62: read Qdata/ID error
70: Lead In Data Read Fail
71: TOC read time out (CD)
80: Can't Buffering
81: Unknown media type

(7) Error code parameters

```
            Example of Error code

1. 01 |05 04 04        00 92 46 00|
      |00 00 00 00      00 00| 23 45
```

This is the detailed contents od error information

(8) Laser hours at error happend.

```
            Example of Error code

1. 01 05 04 04          00 92 46 00
   00 00 00 00          00 00 |23 45|
```

This is Laser hours when an error happaned.

(9) How to Clearing laser hours
Press DISPLAY , CLEAR keys in this order.
Both CD and DVD data are cleared.

```
        Emg. History Check

Laser Hours     CD    0h     0min
                DVD   0h     0min

1. 01 05 04 04          00 92 46 00
   00 00 00 00          00 00 23 45

2. 02 02 01 01          00 A9 4B 00
   00 00 00 00          00 00 23 45

Next  Next Page Prev  Prev Page
 0  Return to Top Menu
```

(10) How to Clearing Emergency code
Press TOPMENU , CLEAR keys in this order.
All emergency code are cleared.

```
        Emg. History Check

Laser Hours     CD    999h   59min
                DVD   999h   59min

1. 00 00 00 00          00 00 00 00
   00 00 00 00          00 00 00 00

2. 00 00 00 00          00 00 00 00
   00 00 00 00          00 00 00 00

Next  Next Page Prev  Prev Page
```

(11) Press 0 key, return to TOP MENU.

6-3. INITIALIZING SETUP DATA

How to initializing setup data.

(1) In stanby mode, press TOP MENU , CLEAR , POWER
to enter Remocon Diagnosis Mode.

(2) Select "3. Emergency History".

```
        Emg. History Check

Laser Hours     CD    999h   59min
                DVD   999h   59min

1. 01 05 04 04          00 92 46 00
   00 00 00 00          00 00 23 45

2. 02 02 01 01          00 A9 4B 00
   00 00 00 00          00 00 23 45

Next  Next Page Prev  Prev Page
```

(3) Initializing setup data
Press MENU , CLEAR keys in this order.
The data have been initialized when "Initialize setup
data..." mesage is displayed.

```
        Emg. History Check

Laser Hours     CD    999h   59min
                DVD   999h   59min

Initialize setup data ...




Next  Next Page Prev  Prev Page
```

(4)   The Emergency history display screen will be restored
        soon.

```
                  Emg. History Check

Laser Hours        CD      999h    59min
                   DVD     999h    59min

1. 01 05 04 04             00 92 46 00
   00 00 00 00             00 00 23 45

2. 02 02 01 01             00 A9 4B 00
   00 00 00 00             00 00 23 45

 Next  Next Page  Prev  Prev Page
```

(12)   Press 0 key, return to TOP MENU.

6-4.   VERSION INFORMATION

Information of firmware version.

(1)   In stanby mode, press TOP MENU , CLEAR , POWER
        to enter Remocon Diagnosis Mode.

(2)   Select "4. Version Information".

```
               Version information

Firm (Main)   : Ver. xxxxx
Firm (Sub)    : xxxxx
RISC          : xxxxx
8032          : xxxxx
Audio DSP     : xxxxx
Servo DSP     : xxxxx

 0  Return to Top Menu
```

(3)   Press 0 key, return to TOP MENU.

6-6. IF CON SELF DIAGNOSTIC FUNCTION

1. IF-127 BOARD (IF CON) TEST MODE
The IF-127 board (IF CON) test mode is the IF CON self-
diagnosis mode. THe IF CON can diagnose the functions of the
IF-127 board that the IF CON controls. Normally, the IF CON
makes a serial communication with the SYSTEM CONTROL
and operates following the commands from the SYSTEM
CONTROL, but in the Test mode, the IF CON operates
independently from the SYSTEM CONTROL.

In the test mode, the following functions can be checked.
1. Button function
2. Remote commander receiving function
3. SYSTEM CONTROL-IF CON serial communication
4. Click shuttle function
5. Fluorescent display tube lighting check
   - Grid check
   - Anode check

In the test mode, the main unit operates same as usual, except
voltage monitoring, communication, display of fluorescent
display tube.
1. The routine that monitors +3.3V (PCONT) of MV-045 board
   is not provided.
2. The monitoring timer for serial communication with the
   SYSTEM CONTROL is not provided. The main unit is not
   placed in the Standby mode, even if the communication with
   SYSTEM CONTROL is normal.
3. Display of fluorescent display tube.
   (Normally, display is mode following the commands from
   SYSTEM CONTROL).

2. OPERATION OF SELF CHECK MODE
The Self Check mode is the function to conduct the basic test to
the FL display and DVD panel section.

2-1.   Self Check Mode Transition Processing
At the AC Power ON after reset of IF CON is released, while
pressing with the MV-045 board are not connected to the IF-127
board, or while pressing the ■ key on the main unit with the IF
CON in STANDBY mode, enter RETURN → DISPLAY (or
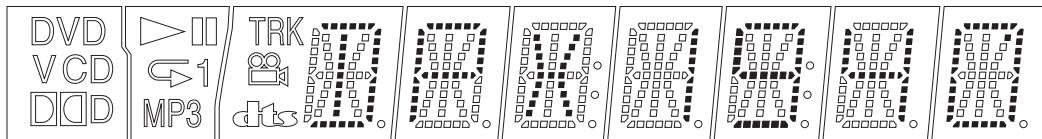 SETUP) on the remote commander, and the main unit transits to
the Self Check Mode.

2-2.   Operation of Auto Self Check

When the Self Check mode becomes active at the AC Power ON or by key input, the test display of the following steps (1) to (4) is repeated.
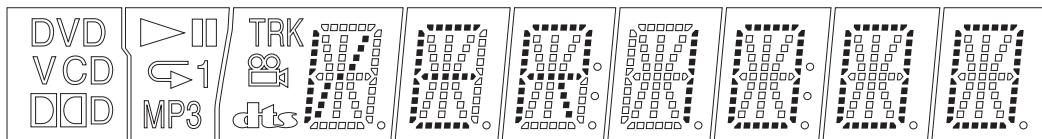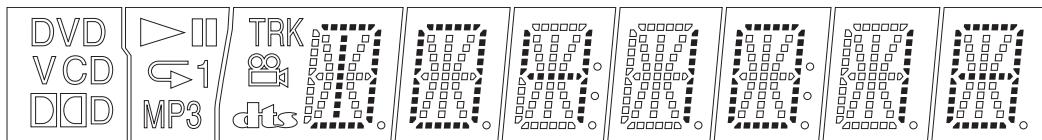
(1) FLD and LED all ON (for 5 seconds)
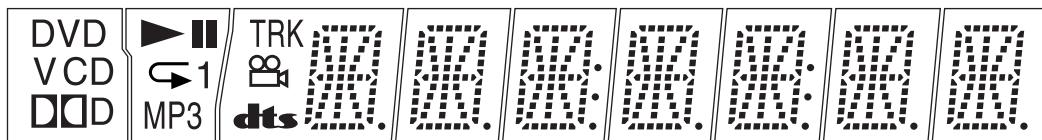
(2) MODEL display (for 2 seconds)

(3) Version display (for 2 seconds)

(4) ROM creation date display (for 2 seconds)

2-3. Each Self Check Function

Each Self Check function tests the FLD display, and key input.

Input Voltage [V]	IC404: Pin No. (Signal)			
	PIN ㉞ (AD1)	PIN ㉟ (AD2)	PIN ㊱ (AD3)	PIN ㊲ (AD4)
0 - 0.20	PLAY	OPEN/CLOSE	STOP	POWER
0.60 - 0.82	PAUSE	EXCHANGE	DISC 4	-
1.16 - 1.47	PREVIOUS	DISC SKIP	DISC 3	-
1.80 - 2.12	NEXT	PROG SEL	DISC 2	-
2.48 - 2.70	DISC 5	-	DISC 1	-

Vref = 3.3V

2-3-1. FLD All ON

2-3-1-1. Transition Keys in Self Check Mode
- ⏏ key and ■ key on the main unit
- ← key on the remote commander

2-3-1-2. Operation and display

In this mode, all segments of FLD turn ON.

- **Example of FLD all ON**
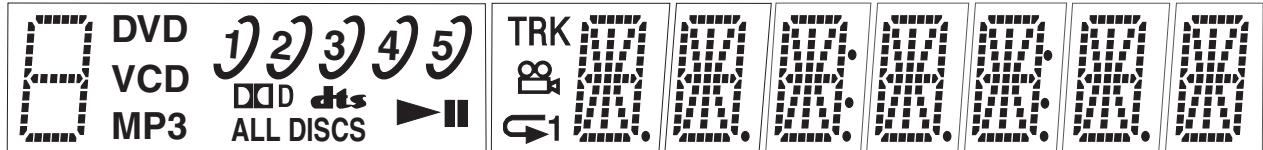
2-3-2. Main Unit Key Code Display

2-3-2-1. Transition Keys in Self Check Mode
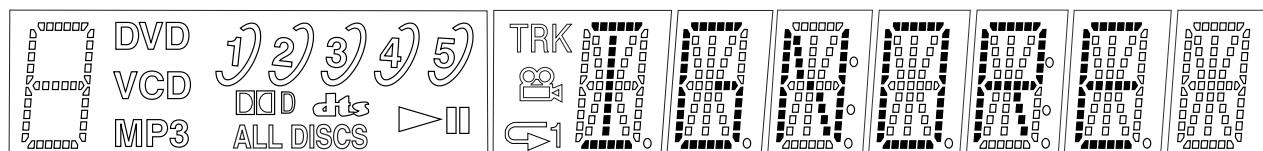- Keys on the main unit except keys transited in Self Check Mode

2-3-2-2. Operation and Display

When a key on the main unit is pressed in the Self Check mode, key code is displayed on the FLD.

- **Key code display (at input of ▷ key, key code: 0Ah)**
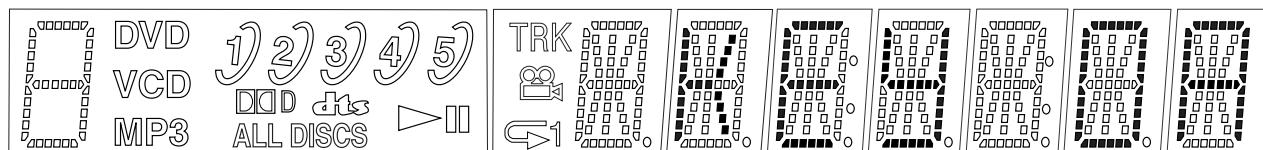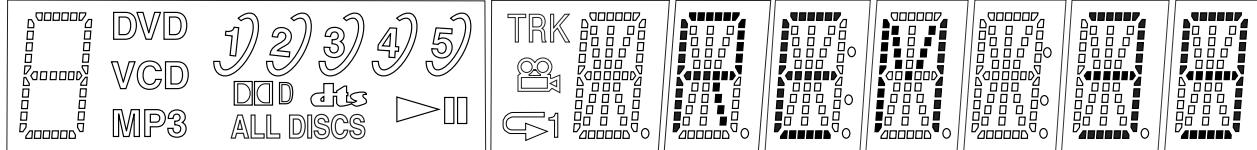

- **At input of faulty voltage**

2-3-3. Remote Commander Key Code Display
2-3-3-1. Transition Keys in Self Check Mode
• Remote commander keys except keys transited in Self Check Mode

2-3-3-2. Operation and Display
When a key on the remote commander is pressed in the Self Check Mode, the code is displayed on th FLD.

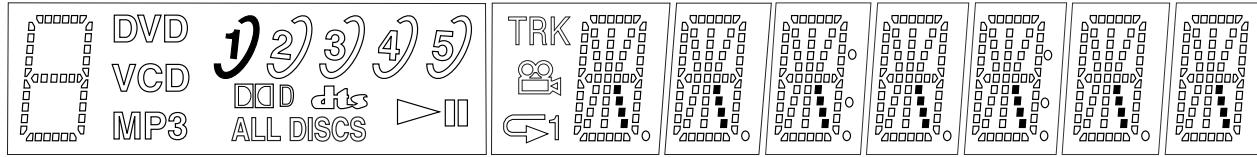• **Remote commander key code display (at input of ⏸ key, key code:39h)**

2-3-4. FLD Anode Test Display and SHUTTLE Click Operation Test
2-3-4-1. Transition Keys in Self Check Mode
• →︎ key on the remote commander
• SHUTTLE on the remote commander during Anode Test display (This unit does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)
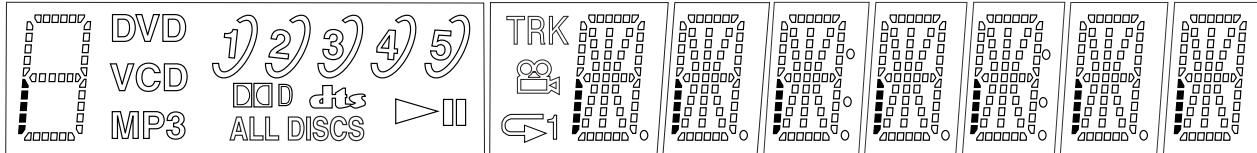
2-3-4-2. Operation and Display
The Self Check Mode transits to this mode when →︎ key is entered. This tests whether each segment turns on individually. Only the first segment of each grid of FLD turns on, and each time the SHUTTLE is entered, the segment of each grid switched in order. When SHUTTLE input is clockwise, the segment switches in 1 - 2 -3 direction, or counterclockwise it switches in 3 - 2- 1 direction.

• **Display at the start of Anode Test**

↓ (Input in CW direction)

## 2-3-5. FLD Grid Test Display and SHUTTLE Click Operation Test
2-3-5-1.Transition Keys in Self Check Mode
• ⬆ key on the remote commander
• SHUTTLE on the remote commander during Grid Test display
  (This unit does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

2-3-5-2.Operation and Display
The Self Check Mode transits to this mode when ⬆ key is entered. This tests whether each grid turns on individually. The first grid only of FLD turns on and other grid turn off. Each time the SHUTTLE is entered, the grid is switched in order. When SHUTTLE input is clockwise, the grid switched in 1 - 2 - 3 direction, or counterclockwise it switches in 3 - 2 - 1 direction.

• **Display at the start of Grid Test**

↓ (Input in CW direction)

DVP-NC60P
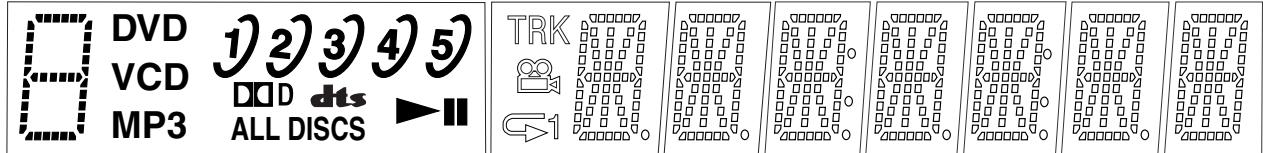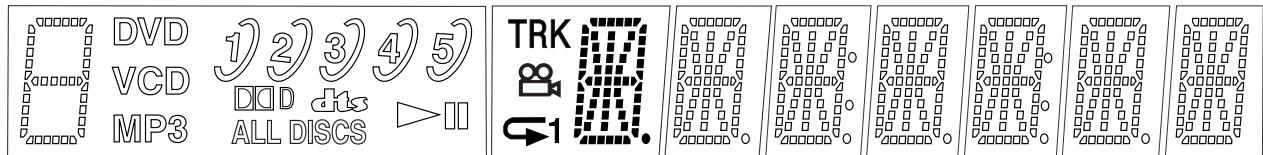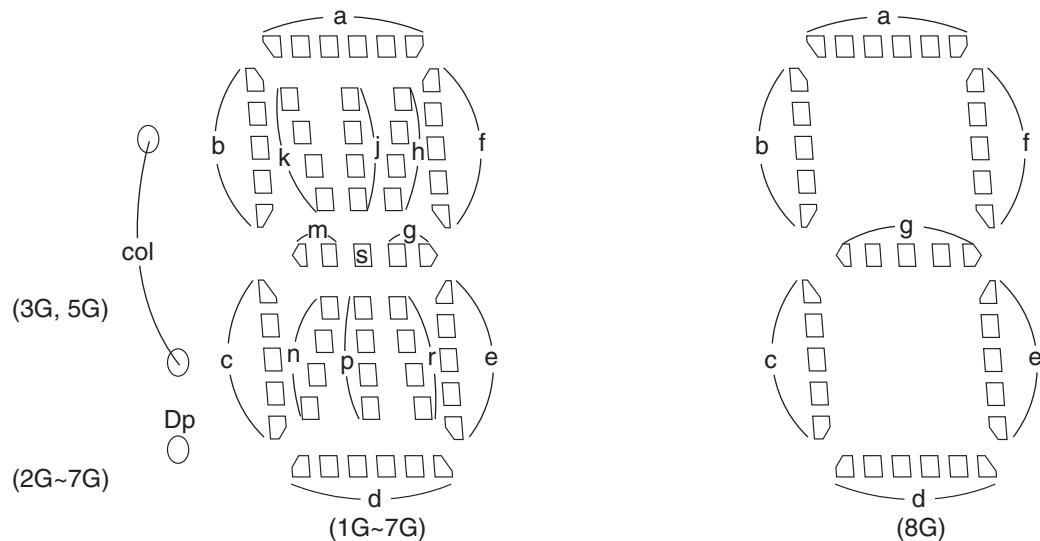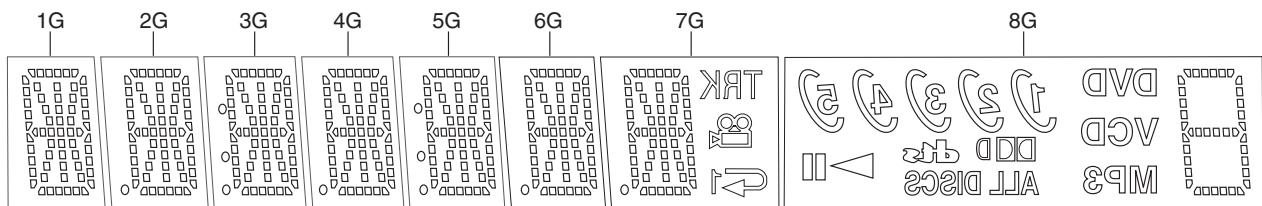
ANODE CONNECTION

	1G	2G	3G	4G	5G	6G	7G	8G
P1	n	n	n	n	n	n	n	⟨7⟩
P2	e	e	e	e	e	e	e	e
P3	c	c	c	c	c	c	c	c
P4	g	g	g	g	g	g	g	g
P5	s	s	s	s	s	s	s	ALL DISCS
P6	m	m	m	m	m	m	m	MP3
P7	f	f	f	f	f	f	f	f
P8	b	b	b	b	b	b	b	b
P9	h	h	h	h	h	h	h	CD
P10	j	j	j	j	j	j	j	V
P11	k	k	k	k	k	k	k	DVD
P12	a	a	a	a	a	a	a	a
P13	p	p	p	p	p	p	p	⟨3⟩
P14	r	r	r	r	r	r	r	⟨8⟩
P15	d	d	d	d	d	d	d	d
P16	–	–	col	–	col	–	TRK	⟨4⟩
P17	–	Dp	Dp	Dp	Dp	Dp	Dp	⟨5⟩
P18	–	–	–	–	–	–	🎥	DD
P19	–	–	–	–	–	–	↱	dts
P20	–	–	–	–	–	–	⟲	◁
P21	–	–	–	–	–	–	–	‖

SECTION 7
ELECTRICAL ADJUSTMENT

This section describes procedures and instructions necessary for adjusting electrical circuits in this unit.

Instruments required:
1) Color monitor TV
2) Oscilloscope 1 or 2 phenomena, band width over 100 MHz, with delay mode
3) Frequency counter (over 8 digits)
4) Digital multimeter
5) Standard commander (RMT-176A)
6) DVD reference disc
   HLX-501 (J-6090-071-A) (dual layer) (NTSC)
   HLX-503 (J-6090-069-A) (single layer) (NTSC)
   HLX-504 (J-6090-088-A) (single layer) (NTSC)
   HLX-505 (J-6090-089-A) (dual layer) (NTSC)

7-1. POWER SUPPLY OUTPUT VOLTAGE CHECK

Mode	Except standby
Instrument	Digital multimeter
EVER +5 V Check	
Test point	CN201 pin ④
Specification	5.0 ± 0.3 Vdc
SW +3.3 V Check	
Test point	CN201 pin ⑤
Specification	3.35 ± 0.2 Vdc
SW+5 V Check	
Test point	CN201 pin ⑥
Specification	$5.0 \pm^{+0.3}_{-0.2}$ Vdc
SW +8 V Check	
Test point	CN201 pin ①
Specification	8.0 ± 0.5 Vdc
EVER +11 V Check	
Test point	CN201 pin ③
Specification	$11.0 \pm^{+1.0}_{-0.5}$ Vdc
EVER −10 V Check	
Test point	CN201 pin ⑩
Specification	$-10.0 \pm^{+0.5}_{-1.0}$ Vdc

Checking method:
1) Confirm that each voltage satisfies the specification.

Caution!
Please do not touch any electrical parts at primary circuit to avoid electrical shock.

7-2. ADJUSTMENT OF VIDEO SYSTEM

1. Checking Video Level

<Purpose>

Checking Video Level the NTSC/PAL standard, and if not correct, the brightness will be too large or small.

Mode	HLX-504
Signal	Color bars 100%
Test point	LINE OUT (VIDEO) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.0 ± 0.08 Vp-p

Adjusting method:

1) In the Video Signal menu "1" Color Bar 100% play back.
2) Confirm that the Video Level is 1.0 ± 0.08 Vp-p.

1.0 ± 0.08 Vp-p

Fig. 7-1.

2. Checking Progressive Video Output Level

<Purpose>

Check progressive video output level. If it is incorrect, correct brightness will not be attained when connected to, for instance, projector.

Mode	HLX-504
Signal	Color bars 100%
Test point	COMPONENT VIDEO OUT (Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.0 ± 0.08 Vp-p

Adjusting method:

1) In the Video Signal menu "1" Color Bar 100% play back.
2) Confirm that the Y level is 1.0 ± 0.08 Vp-p.

1.0 ± 0.08 Vp-p

Fig. 7-2.

3. Checking S Video Output S-Y

<Purpose>

Check S-terminal video output. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with a S-terminal cable.

Mode	HLX-504
Signal	Color bars 100%
Test point	S VIDEO OUT (S-Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.0 ± 0.08 Vp-p

Checking method:

1) In the Video Signal menu "1" Color Bar 100% play back.
2) Confirm that the S-Y level is 1.0 ± 0.08 Vp-p.

1.0 ±0.08 Vp-p

Fig. 7-3.

4. Checking S Video Output S-C

<Purpose>

This checks whether the S-C satisfies the NTSC/PAL standard. If it is not correct, the colors will be too dark or light.

Mode	HLX-504
Signal	Color bars 100%
Test point	S VIDEO OUT (S-C) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	A = 286 ± 30 mVp-p (NTSC) A = 300 ± 100 mVp-p (PAL)

Checking method:

1) In the Video Signal menu "1" Color Bar 100% play back.
2) Confirm that the S-C burst is "A".

A
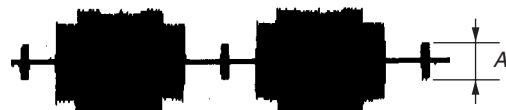
Fig. 7-4.

5. Checking Component Video Output Y

\<Purpose\>

This checks component video output Y. If it is incorrect, correct brightness will not be attained when connected to, for instance, projector.

Mode	HLX-504
Signal	Color bars
Test point	COMPONENT VIDEO OUT (Y) connector, (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.0 ± 0.08 Vp-p

Checking method:

1) In the Video Signal menu "1" Color Bar 100% play back.
2) Confirm that the Y level is 1.0 ± 0.08 Vp-p.

1.0 ±0.08 Vp-p

Fig. 7-5.

6. Checking Component Video Output B-Y

\<Purpose\>

This checks component video output B-Y. If it is incorrect, correct colors will not be displayed when connected to, for instance, projector.

Mode	HLX-504
Signal	Color bars
Test point	COMPONENT VIDEO OUT (P$_B$) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	A = 700 ± 70 mVp-p

Checking method:

1) In the Video Signal menu "1" Color Bar 100% play back.
2) Confirm that the B-Y level is A.

A

Fig. 7-6.

7. Checking Component Video Output R-Y

\<Purpose\>

This checks component video output R-Y. If it is incorrect, correct colors will not be displayed when connected to, for instance, projector.

Mode	HLX-504
Signal	Color bars
Test point	COMPONENT VIDEO OUT (P$_R$) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	B = 700 ± 70 mVp-p

Checking method:

1) In the Video Signal menu "1" Color Bar 100% play back.
2) Confirm that the R-Y level is B.

B

Fig. 7-7.

DVP-NC60P

MEMO

SECTION 8
REPAIR PARTS LIST

8-1. EXPLODED VIEWS

NOTE:
• -XX and -X mean standardized parts, so they may have some difference from the original one.
• Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
• The mechanical parts with no reference number in the exploded views are not supplied.
• Color Indication of Appearance Parts Example: KNOB, BALANCE (WHITE) . . . (RED)

           ↑   ↑

Parts Color Cabinet's Color

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.
Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

8-1-1. MAIN SECTION

ns : not supplied
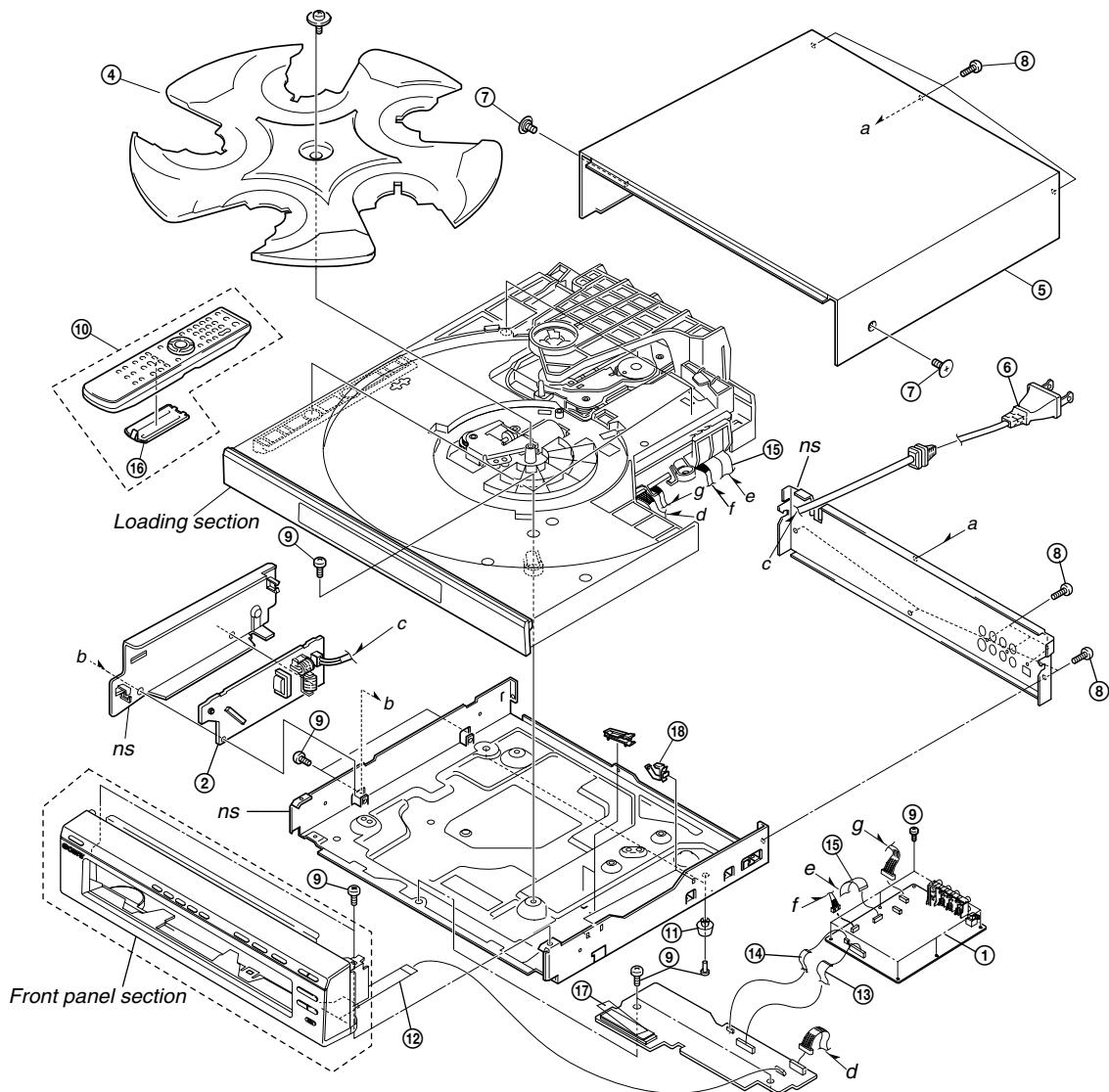
Loading section

Front panel section

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	**Note :** Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

DVP-NC60P

Ref. No.	Part No.	Description	Remark
1	A-1102-541-A	MV-045 (1940-U2) COMPL	
⚠2	1-478-538-12	POWER SUPPLY BLOCK	
4	3-091-487-31	TRAY	
5	X-2050-481-1	UPPER CASE	
⚠6	1-828-451-21	POWER-SUPPLY CORD	
7	3-070-883-41	SCREW, TAPPING	
8	3-077-331-11	+BV3 (3-CR)	
9	3-077-331-21	+BV3 (3-CR)	
10	1-479-179-41	REMOTE COMMANDER (RMT-D176A)	
11	3-957-819-01	FOOT	
12	1-828-878-11	FFC FIS-004	
13	1-830-273-11	FLEXIBLE FLAT CABLE (FIM-008)	
14	1-830-274-11	FLEXIBLE FLAT CABLE (FIM-009)	
15	1-830-286-11	FLEXIBLE FLAT CABLE (FMO-006)	
16	3-071-119-91	COVER,BATTERY	
17	2-587-813-01	DISPLAY FILTER	
18	* 3-632-494-01	RE-USE CLAMP	

Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

8-1-2. FRONT PANEL SECTION
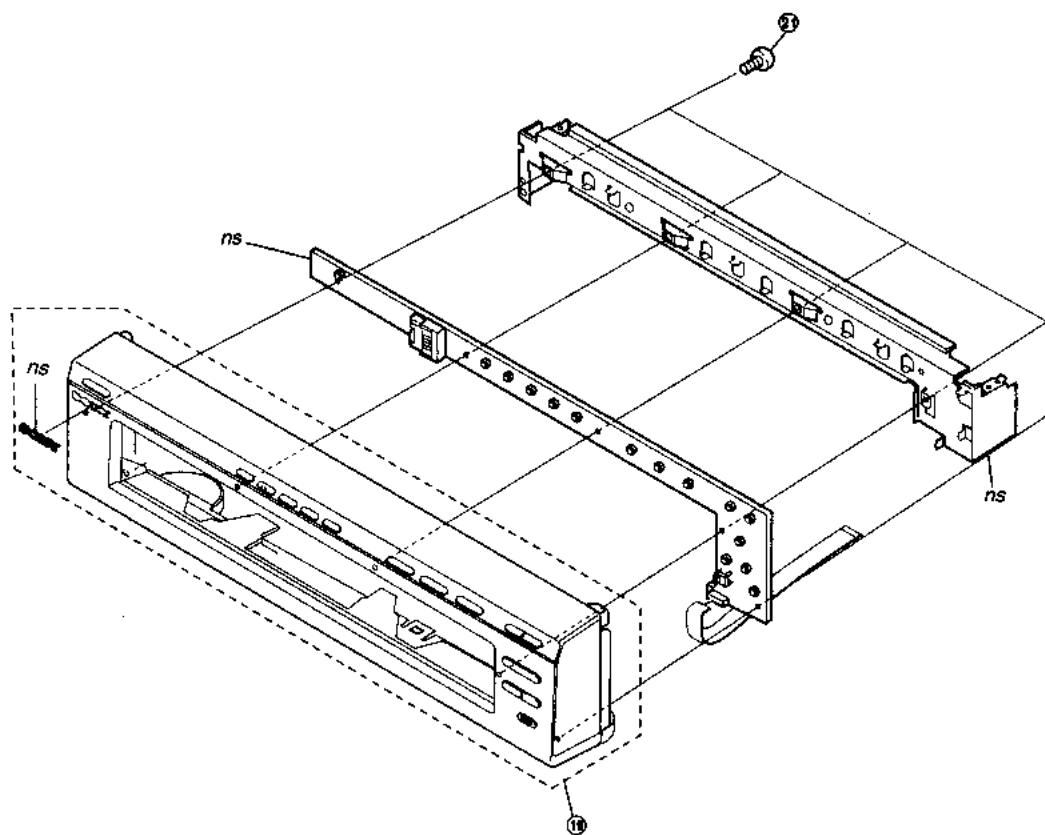
Ref. No.	Part No.	Description	Remark
19	X-2025-231-1	FRONT PANEL ASSY (P-S)	
21	3-087-053-01	+BVTP2-6 (3CR)	

DVP-NC60P

8-1-3. LOADING SECTION
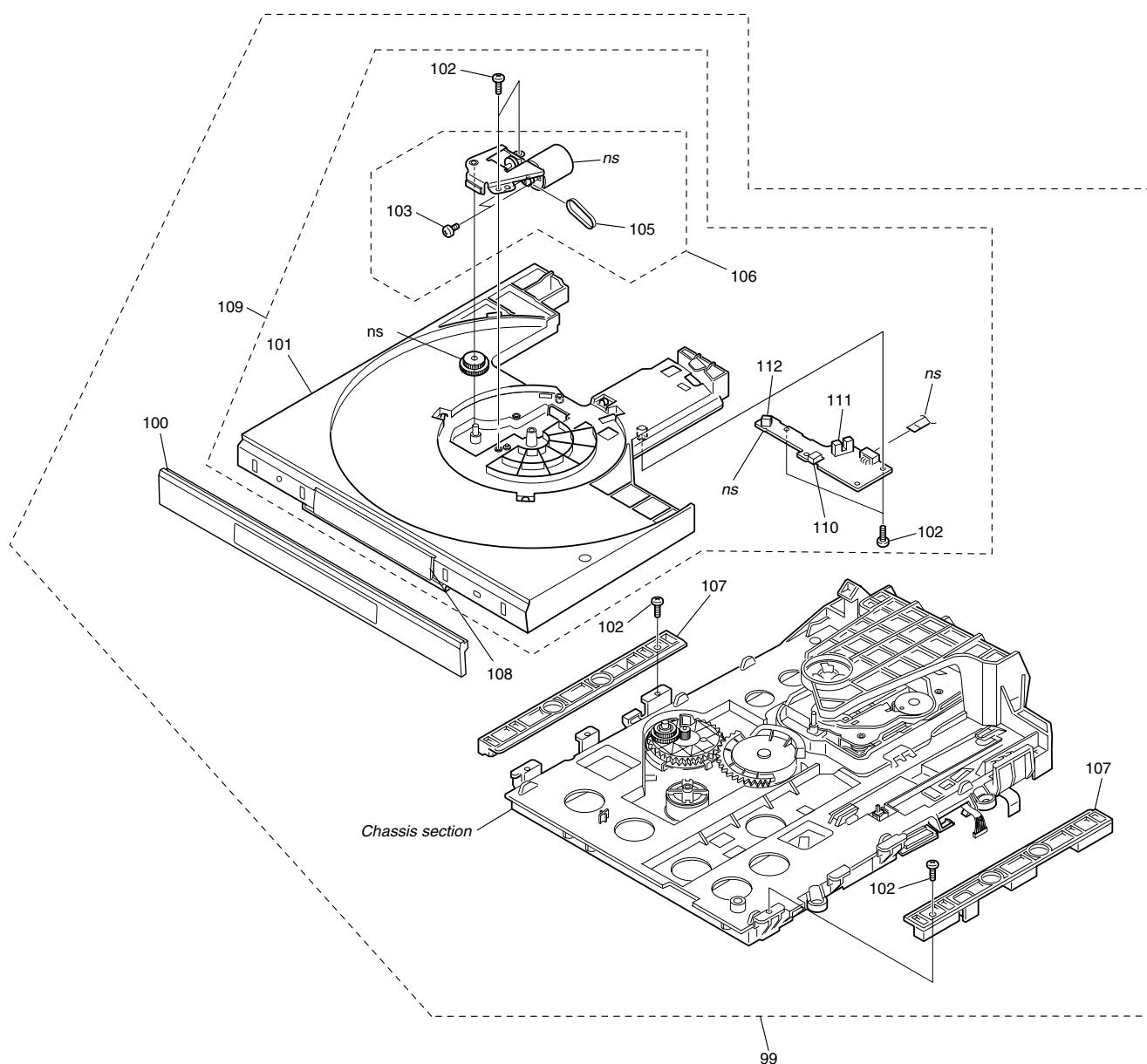
Ref. No.	Part No.	Description	Remark
99	A-1107-524-A	LOADING ASSY (T)	
100	X-2025-232-2	COVER ASSY, TRAY (P-S)	
102	3-087-053-01	+BVTP 2.6 (3CR)	
103	3-088-617-01	SCREW, +P M3 X M3 (3CR)	
104	3-016-533-01	WASHER (FR) STOPPER	
105	3-074-725-01	BELT, TD	
106	A-1107-526-A	UNIT ASSY, TD	
107	3-074-737-21	PLATE (GUIDE)	
108	X-3954-419-2	MIRROR ASSY, REFLECTOR	
109	A-1107-525-A	TABLE ASSY	

8-1-4. CHASSIS SECTION
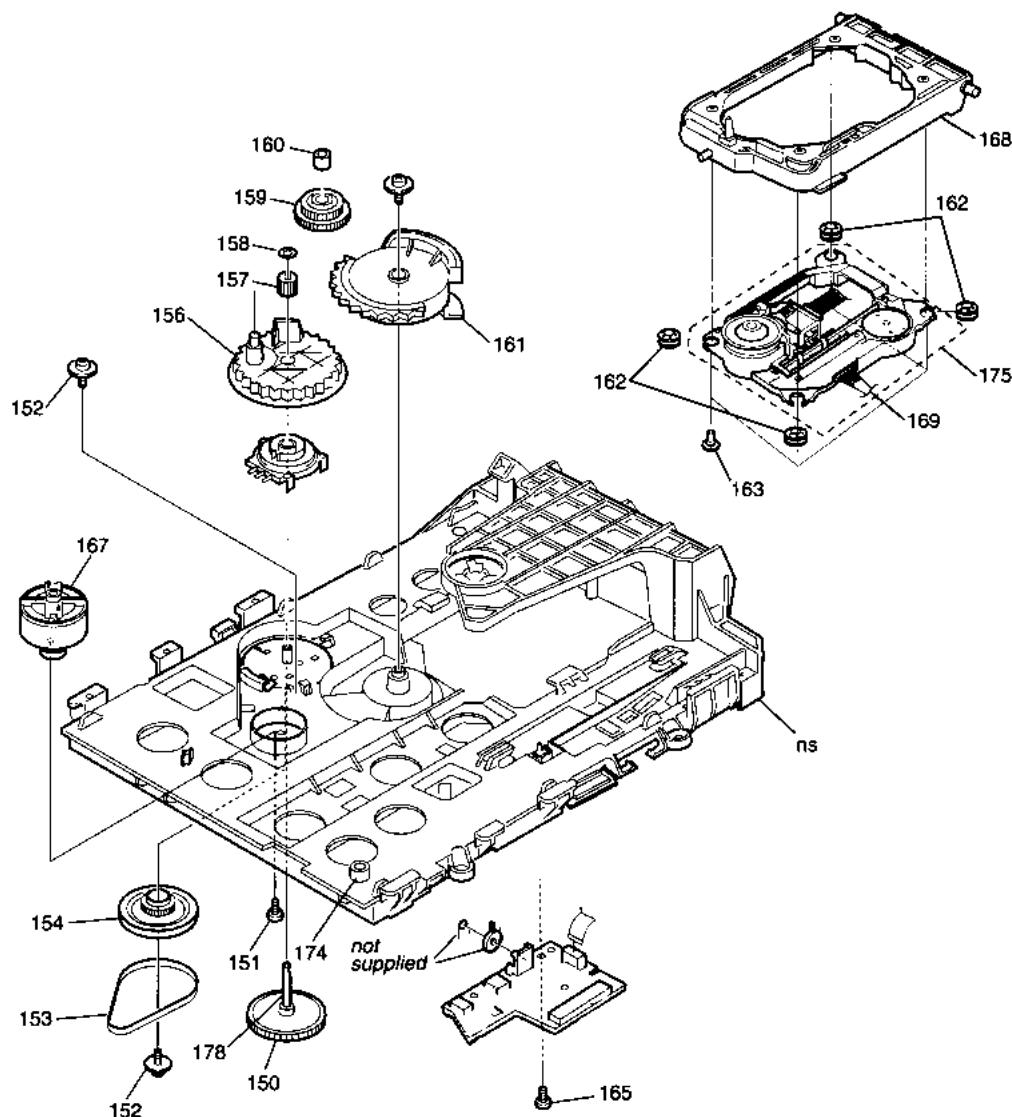
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
150	3-091-491-01	GEAR, SHAFT		163	3-087-599-01	INSULATOR SCREW	
151	3-088-618-01	SCREW, +B M2.6 x 4 (3CR)		167	X-2021-925-2	MOTOR ASSY, LOADNG	
152	3-087-816-01	FR SCREW (+PTPWH M2.6)					
153	2-022-451-01	BELT (LOADING)					
154	3-074-744-01	GEAR LOADING (A)		168	3-091-493-01	BU HOLDER	
156	3-091-490-01	GEAR, SWING					
157	3-074-741-01	GEAR LOADING (B)					
158	3-016-533-11	WASHER (FR) STOPPER					
159	3-074-740-01	GEAR LOADING (C)					
160	3-074-739-01	COLLAR SWING		174	4-951-619-01	CUSHION (A)	
				175	8-820-291-02	DEVICE OPTICAL KHM-310CAB/C2RP	
161	3-091-489-01	GEAR, CHUCK					
162	3-088-372-01	INSULATOR		178	3-091-492-01	SHAFT LOADING	

DVP-NC60P

FR-231 | IF-127

8-2. ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.

- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . uPA. . : µPA. .
  uPB. .   : µPB. . uPC. . : µPC. .
  uPD. .   : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH
- Abbreviation

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
		FR-231 BOARD			
		*************			
		<CONNECTOR>			
CN601	1-750-186-11	CONNECTOR, BOARD TO BOARD 6P			
		<CHIP CONDUCTOR>			
JR601	1-216-295-00	SHORT CHIP	0		
JR602	1-216-295-00	SHORT CHIP	0		
		<SWITCH>			
S601	1-771-410-21	SWITCH, TACT			
		IF-127 BOARD			
		************			
		<CAPACITOR>			
C401	1-115-339-11	CERAMIC CHIP	0.1UF	10.00%	50V
C403	1-124-589-11	ELECT	47UF	20.00%	16V
C405	1-115-339-11	CERAMIC CHIP	0.1UF	10.00%	50V
C406	1-163-021-91	CERAMIC CHIP	0.01UF	10.00%	50V
C407	1-115-339-11	CERAMIC CHIP	0.1UF	10.00%	50V
C408	1-115-339-11	CERAMIC CHIP	0.1UF	10.00%	50V
C409	1-115-339-11	CERAMIC CHIP	0.1UF	10.00%	50V
C417	1-130-481-00	MYLAR	0.0068UF	5.00%	50V
C418	1-115-339-11	CERAMIC CHIP	0.1UF	10.00%	50V
C419	1-104-666-11	ELECT	220UF	20.00%	25V
C420	1-163-021-91	CERAMIC CHIP	0.01UF	10.00%	50V
C422	1-115-339-11	CERAMIC CHIP	0.1UF	10.00%	50V
C423	1-115-339-11	CERAMIC CHIP	0.1UF	10.00%	50V
C425	1-126-965-91	ELECT	22UF	20.00%	50V
C431	1-115-339-11	CERAMIC CHIP	0.1UF	10.00%	50V
C432	1-163-009-91	CERAMIC CHIP	0.001UF	10.00%	50V
C490	1-163-021-91	CERAMIC CHIP	0.01UF	10.00%	50V

Ref. No.	Part No.	Description			Remark
C491	1-164-489-11	CERAMIC CHIP	0.22UF	10.00%	16V
C492	1-164-489-11	CERAMIC CHIP	0.22UF	10.00%	16V
C493	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
		<CONNECTOR>			
CN403	1-815-381-11	CONNECTOR, FPC/FFC 5P			
* CN404	1-568-938-11	PIN, CONNECTOR 11P			
		<DIODE>			
D402	8-719-069-54	DIODE UDZSTE-175.1B			
D403	8-719-041-97	DIODE MA113-(TX)			
D404	8-719-041-97	DIODE MA113-(TX)			
D405	8-719-041-97	DIODE MA113-(TX)			
D406	8-719-041-97	DIODE MA113-(TX)			
D412	8-719-422-41	DIODE MA8051-L-TX			
		<TERMINAL>			
* ET402	1-537-738-21	TERMINAL, EARTH			
		<IC>			
IC403	8-759-598-69	IC BA6956AN			
IC404	6-805-401-01	IC TMP86CK74AFG-6AJ0(M			
IC408	6-704-114-01	IC S-80828CNUA-B8NT2G			
IC474	6-702-302-01	IC TK11133CSCL-G			
		<CHIP CONDUCTOR>			
JR400	1-216-295-00	SHORT CHIP	0		
JR401	1-216-295-00	SHORT CHIP	0		
JR402	1-216-295-00	SHORT CHIP	0		
JR403	1-216-295-00	SHORT CHIP	0		
JR404	1-216-295-00	SHORT CHIP	0		
JR405	1-216-295-00	SHORT CHIP	0		
JR406	1-216-295-00	SHORT CHIP	0		
JR407	1-216-295-00	SHORT CHIP	0		
JR408	1-216-295-00	SHORT CHIP	0		
JR409	1-216-295-00	SHORT CHIP	0		

Ref. No.	Part No.	Description			Remark
JR410	1-216-295-00	SHORT CHIP	0		
JR411	1-216-295-00	SHORT CHIP	0		
JR412	1-216-295-00	SHORT CHIP	0		
JR413	1-216-295-00	SHORT CHIP	0		
JR414	1-216-295-00	SHORT CHIP	0		
JR415	1-216-295-00	SHORT CHIP	0		
JR416	1-216-295-00	SHORT CHIP	0		
JR417	1-216-295-00	SHORT CHIP	0		
JR418	1-216-295-00	SHORT CHIP	0		
JR419	1-216-295-00	SHORT CHIP	0		
JR420	1-216-295-00	SHORT CHIP	0		
JR421	1-216-295-00	SHORT CHIP	0		

<INDUCTOR>

L401	1-408-982-11	INDUCTOR	100UH	

<FLUORESCENT>

ND401	1-518-985-11	VACUUM FLUORESCENT DISPLAYS	

<TRANSISTOR>

Q401	8-729-420-82	TRANSISTOR 2SD874A-R-TX
Q402	8-729-420-82	TRANSISTOR 2SD874A-R-TX
Q403	8-729-424-08	TRANSISTOR UN2111
Q405	8-729-230-49	TRANSISTOR 2SC2712-YG

<RESISTOR>

Ref. No.	Part No.	Description			
R407	1-216-013-00	RES-CHIP	33	5%	1/10W
R408	1-216-073-91	RES-CHIP	10K	5%	1/10W
R409	1-216-073-91	RES-CHIP	10K	5%	1/10W
R411	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R412	1-216-049-11	RES-CHIP	1K	5%	1/10W
R413	1-216-047-91	RES-CHIP	820	5%	1/10W
R414	1-216-095-00	RES-CHIP	82K	5%	1/10W
R415	1-216-033-00	RES-CHIP	220	5%	1/10W
R416	1-216-049-11	RES-CHIP	1K	5%	1/10W
R417	1-216-069-00	RES-CHIP	6.8K	5%	1/10W
R418	1-216-027-00	RES-CHIP	120	5%	1/10W
R421	1-216-073-91	RES-CHIP	10K	5%	1/10W
R427	1-216-073-91	RES-CHIP	10K	5%	1/10W
R428	1-216-025-11	RES-CHIP	100	5%	1/10W
R429	1-216-097-11	RES-CHIP	100K	5%	1/10W
R432	1-216-097-11	RES-CHIP	100K	5%	1/10W
R433	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R434	1-216-097-11	RES-CHIP	100K	5%	1/10W
R437	1-216-073-91	RES-CHIP	10K	5%	1/10W
R442	1-216-025-11	RES-CHIP	100	5%	1/10W
R443	1-216-025-11	RES-CHIP	100	5%	1/10W
R444	1-216-025-11	RES-CHIP	100	5%	1/10W
R445	1-216-025-11	RES-CHIP	100	5%	1/10W
R446	1-216-025-11	RES-CHIP	100	5%	1/10W
R447	1-216-025-11	RES-CHIP	100	5%	1/10W
R448	1-216-025-11	RES-CHIP	100	5%	1/10W
R449	1-216-089-91	RES-CHIP	47K	5%	1/10W
R450	1-216-089-91	RES-CHIP	47K	5%	1/10W
R451	1-216-073-91	RES-CHIP	10K	5%	1/10W
R452	1-216-073-91	RES-CHIP	10K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R453	1-216-073-91	RES-CHIP	10K	5%	1/10W
R454	1-216-049-11	RES-CHIP	1K	5%	1/10W
R460	1-216-073-91	RES-CHIP	10K	5%	1/10W
R490	1-216-083-00	RES-CHIP	27K	5%	1/10W
R491	1-216-021-00	RES-CHIP	68	5%	1/10W
R492	1-216-295-00	SHORT CHIP	0		

<TRANSFORMER>

T401	1-443-639-11	DC-DC CONVERTER TRANSFORMER

<VIBRATOR>

X401	1-781-472-21	VIBRATOR, CERAMIC

MD-105 BOARD
****

<CONNECTOR>

	Ref. No.	Part No.	Description
	CN004	1-506-481-11	PIN, CONNECTOR 2P
*	CN003	1-564-013-11	PIN, CONNECTOR 3P
	CN001	1-506-490-21	PIN, CONNECTOR 11P
	CN002	1-770-637-11	CONNECTOR, FFC/FPC 6P
	S001	1-786-514-21	SWITCH, LEVER (SLIDE)

A-1102-541-A	MV-045 (1940-U2) COMPLETE

****

Notes:
MV-045 mounted PWB must be replaced
if IC103 (EEPROM IC) is damaged or not functioning.

The old MV-045 mounted PWB must be completely disposed.

<CAPACITOR>

Ref. No.	Part No.	Description			
C101	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C102	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C105	1-126-786-11	ELECT	47UF	20.00%	16V
C106	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C112	1-126-786-11	ELECT	47UF	20.00%	16V
C113	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C114	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C115	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C116	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C117	1-126-964-11	ELECT	10UF	20.00%	50V
C118	1-126-964-11	ELECT	10UF	20.00%	50V
C119	1-126-964-11	ELECT	10UF	20.00%	50V
C120	1-165-908-11	CERAMIC CHIP	1UF	10%	10V
C121	1-165-908-11	CERAMIC CHIP	1UF	10%	10V
C122	1-165-908-11	CERAMIC CHIP	1UF	10%	10V
C123	1-165-908-11	CERAMIC CHIP	1UF	10%	10V
C124	1-165-908-11	CERAMIC CHIP	1UF	10%	10V

DVP-NC60P

MV-045

Ref. No.	Part No.	Description			Remark
C125	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C126	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C127	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C128	1-162-965-11	CERAMIC CHIP	0.0015UF	10.00%	50V
C130	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C131	1-125-889-91	CERAMIC CHIP	2.2UF	0%	10V
C132	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C133	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C135	1-164-677-11	CERAMIC CHIP	0.033UF	10.00%	16V
C136	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C137	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C138	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C139	1-162-919-11	CERAMIC CHIP	22PF	5.00%	50V
C140	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C144	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C146	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C147	1-165-176-11	CERAMIC CHIP	0.047UF	10.00%	16V
C148	1-165-176-11	CERAMIC CHIP	0.047UF	10.00%	16V
C149	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C150	1-126-964-11	ELECT	10UF	20.00%	50V
C151	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V
C152	1-162-915-11	CERAMIC CHIP	10PF	0.50PF	50V
C153	1-162-917-11	CERAMIC CHIP	15PF	5.00%	50V
C154	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C155	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C156	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C158	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C160	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C161	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C162	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C163	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C164	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C171	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C172	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C174	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C175	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C176	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C177	1-126-947-11	ELECT	47UF	20.00%	35V
C179	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C180	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C181	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C182	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C183	1-128-934-91	CERAMIC CHIP	0.33UF	20%	10V
C184	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C186	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C187	1-126-947-11	ELECT	47UF	20.00%	35V
C188	1-165-908-11	CERAMIC CHIP	1UF	10%	10V
C189	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C190	1-126-947-11	ELECT	47UF	20.00%	35V
C191	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C192	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C193	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C195	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C197	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C199	1-162-968-11	CERAMIC CHIP	0.0047UF	10.00%	50V
C203	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C205	1-164-230-11	CERAMIC CHIP	220PF	5.00%	50V
C206	1-164-230-11	CERAMIC CHIP	220PF	5.00%	50V
C208	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C209	1-164-677-11	CERAMIC CHIP	0.033UF	10.00%	16V
C210	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C211	1-164-677-11	CERAMIC CHIP	0.033UF	10.00%	16V
C212	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C213	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C214	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C216	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C217	1-126-947-11	ELECT	47UF	20.00%	35V
C218	1-126-964-11	ELECT	10UF	20.00%	50V
C219	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C220	1-126-964-11	ELECT	10UF	20.00%	50V
C221	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C222	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C223	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C224	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C228	1-162-968-11	CERAMIC CHIP	0.0047UF	10.00%	50V
C301	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C310	1-126-786-11	ELECT	47UF	20.00%	16V
C311	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C312	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C313	1-126-786-11	ELECT	47UF	20.00%	16V
C314	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C401	1-164-739-11	CERAMIC CHIP	560PF	5.00%	50V
C402	1-164-739-11	CERAMIC CHIP	560PF	5.00%	50V
C403	1-164-218-11	CERAMIC CHIP	180PF	5.00%	50V
C404	1-164-218-11	CERAMIC CHIP	180PF	5.00%	50V
C405	1-164-218-11	CERAMIC CHIP	180PF	5.00%	50V
C406	1-164-218-11	CERAMIC CHIP	180PF	5.00%	50V
C407	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C408	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C409	1-126-960-11	ELECT	1UF	20.00%	50V
C410	1-126-947-11	ELECT	47UF	20.00%	35V
C411	1-126-947-11	ELECT	47UF	20.00%	35V
C413	1-126-934-11	ELECT	220UF	20.00%	16V
C415	1-164-230-11	CERAMIC CHIP	220PF	5.00%	50V
C416	1-164-230-11	CERAMIC CHIP	220PF	5.00%	50V
C422	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C425	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C427	1-126-947-11	ELECT	47UF	20.00%	35V
C428	1-126-964-11	ELECT	10UF	20.00%	50V
C429	1-126-964-11	ELECT	10UF	20.00%	50V
C432	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C433	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C434	1-126-964-11	ELECT	10UF	20.00%	50V
C435	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C444	1-126-947-11	ELECT	47UF	20.00%	35V
C501	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C502	1-126-786-11	ELECT	47UF	20.00%	16V
C503	1-126-786-11	ELECT	47UF	20.00%	16V
C504	1-126-786-11	ELECT	47UF	20.00%	16V
C508	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C510	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C512	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C513	1-107-826-11	CERAMIC CHIP	0.1UF	0.00%	16V
C514	1-126-786-11	ELECT	47UF	20.00%	16V
CN101	1-815-763-32	CONNECTOR, FFC/FPC 24P			
* CN105	1-564-708-11	PIN, CONNECTOR (SMALL TYPE) 6P			
* CN201	1-564-708-11	PIN, CONNECTOR (SMALL TYPE) 6P			
CN202	1-815-381-11	CONNECTOR, FPC/FFC 5P			
* CN501	1-568-937-11	PIN, CONNECTOR 10P			

Ref. No.	Part No.	Description			Remark
		<DIODE>			
D308	8-719-071-15	DIODE HZM6.8ZWA1TL			
D309	8-719-071-15	DIODE HZM6.8ZWA1TL			
D401	8-719-914-43	DIODE DAN202K			
D402	8-719-914-44	DIODE DAP202K			
D404	8-719-988-61	DIODE 1SS355TE-17			
		<FERRITE>			
* FB106	1-469-670-21	FERRITE	0UH		
FB107	1-469-324-21	FERRITE	0UH		
* FB108	1-469-670-21	FERRITE	0UH		
FB109	1-414-760-21	FERRITE	0UH		
FB110	1-414-760-21	FERRITE	0UH		
* FB111	1-469-670-21	FERRITE	0UH		
* FB112	1-469-670-21	FERRITE	0UH		
* FB113	1-469-670-21	FERRITE	0UH		
* FB114	1-469-670-21	FERRITE	0UH		
* FB115	1-469-670-21	FERRITE	0UH		
FB116	1-469-118-21	FERRITE	0UH		
FB117	1-469-118-21	FERRITE	0UH		
FB118	1-469-118-21	FERRITE	0UH		
FB119	1-469-118-21	FERRITE	0UH		
FB122	1-469-128-21	FERRITE	0UH		
FB123	1-414-226-21	FERRITE	0UH		
FB124	1-469-128-21	FERRITE	0UH		
* FB401	1-469-670-21	FERRITE	0UH		
FB501	1-469-324-21	FERRITE	0UH		
FB502	1-469-324-21	FERRITE	0UH		
FB503	1-469-324-21	FERRITE	0UH		
FB504	1-469-324-21	FERRITE	0UH		
FB505	1-469-324-21	FERRITE	0UH		
FB506	1-469-324-21	FERRITE	0UH		
FL101	1-234-177-21	FERRITE	0UH		
FL501	1-234-177-21	FERRITE	0UH		
FL502	1-234-177-21	FERRITE	0UH		
FL503	1-233-893-21	FILTER, CHIP EMI			
		<IC>			
IC101	6-707-535-01	IC CXD9849R			
IC102		IC(ROM)			
IC103		IC (SEE PAGE 8-7)			
IC104	6-707-897-01	IC EDS6416AHTA-75-E			
IC105	6-702-302-01	IC TK11133CSCL-G			
IC107	6-702-302-01	IC TK11133CSCL-G			
IC108	6-703-224-01	IC S-80828CNNB-B8NT2G			
IC110	6-707-739-01	IC MM1661JTRE			
IC201	6-704-524-01	IC FAN8036L			
IC303	8-759-662-86	IC NJM79M05DL1A(TE2)			
IC304	6-706-453-01	IC NJM2587V(TE2)			
IC401	6-707-187-01	IC HA17558AFEL-E			
IC403	6-706-025-01	IC HA178L05UA-TL-E			
IC405	6-600-430-01	IC TOTX177(F,T)			
IC406	6-707-490-01	IC AK4385ET-E2			
		<IC LINK>			
⚠ PS501	1-576-509-21	IC LINK	1A	50V	
⚠ PS502	1-576-509-21	IC LINK	1A	50V	

Ref. No.	Part No.	Description				Remark
		<TRANSISTOR>				
Q101	6-550-008-01	TRANSISTOR UM6K1N-TN				
Q102	6-550-653-01	TRANSISTOR QST8TR				
Q103	8-729-424-59	TRANSISTOR UN2212-TX				
Q304	8-729-024-89	TRANSISTOR MUN2213T1				
Q305	8-729-024-83	TRANSISTOR MUN2111T1				
Q401	8-729-010-08	TRANSISTOR MSB710-RT1				
Q402	8-729-024-89	TRANSISTOR MUN2213T1				
Q403	8-729-010-25	TRANSISTOR MSD601-RT1				
Q404	8-729-424-70	TRANSISTOR UN2217-QRS-TX				
Q405	8-729-010-05	TRANSISTOR MSB709-RT1				
Q407	6-551-287-01	TRANSISTOR 2SD2704K-T146				
Q408	6-551-287-01	TRANSISTOR 2SD2704K-T146				
Q411	8-729-010-25	TRANSISTOR MSD601-RT1				
Q416	8-729-010-05	TRANSISTOR MSB709-RT1				
Q501	8-729-014-90	TRANSISTOR 2SD2185R-TX				
Q502	8-729-024-86	TRANSISTOR MUN2114T1				
		<RESISTOR>				
R101	1-216-809-11	METAL CHIP	100	5%	1/10W	
R103	1-216-864-11	SHORT CHIP	0			
R106	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R107	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R108	1-216-857-11	METAL CHIP	1M	5%	1/10W	
R109	1-216-864-11	SHORT CHIP	0			
R110	1-216-841-11	METAL CHIP	47K	5%	1/10W	
R111	1-216-809-11	METAL CHIP	100	5%	1/10W	
R112	1-211-977-11	METAL CHIP	22	0.5%	1/10W	
R113	1-211-977-11	METAL CHIP	22	0.5%	1/10W	
R114	1-216-845-11	METAL CHIP	100K	5%	1/10W	
R115	1-211-977-11	METAL CHIP	22	0.5%	1/10W	
R116	1-216-821-11	METAL CHIP	1K	5%	1/10W	
R117	1-216-841-11	METAL CHIP	47K	5%	1/10W	
R118	1-216-801-11	METAL CHIP	22	5%	1/10W	
R120	1-216-801-11	METAL CHIP	22	5%	1/10W	
R121	1-216-801-11	METAL CHIP	22	5%	1/10W	
R123	1-216-864-11	SHORT CHIP	0			
R124	1-216-841-11	METAL CHIP	47K	5%	1/10W	
R127	1-216-864-11	SHORT CHIP	0			
R132	1-216-845-11	METAL CHIP	100K	5%	1/10W	
R134	1-216-864-11	SHORT CHIP	0			
R135	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R136	1-216-835-11	METAL CHIP	15K	5%	1/10W	
R137	1-216-864-11	SHORT CHIP	0			
R141	1-216-855-11	METAL CHIP	680K	5%	1/10W	
R142	1-216-845-11	METAL CHIP	100K	5%	1/10W	
R145	1-216-864-11	SHORT CHIP	0			
R147	1-216-864-11	SHORT CHIP	0			
R148	1-216-864-11	SHORT CHIP	0			

Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

DVP-NC60P

MV-045

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
R149	1-216-864-11	SHORT CHIP	0			R250	1-216-864-11	SHORT CHIP	0		
R151	1-216-833-11	METAL CHIP	10K	5%	1/10W	R251	1-216-864-11	SHORT CHIP	0		
R152	1-216-864-11	SHORT CHIP	0			R320	1-216-864-11	SHORT CHIP	0		
R153	1-216-864-11	SHORT CHIP	0			R321	1-216-833-11	METAL CHIP	10K	5%	1/10W
R154	1-216-864-11	SHORT CHIP	0			R325	1-216-864-11	SHORT CHIP	0		
R155	1-216-864-11	SHORT CHIP	0			R327	1-216-833-11	METAL CHIP	10K	5%	1/10W
R156	1-216-809-11	METAL CHIP	100	5%	1/10W	R331	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R159	1-216-864-11	SHORT CHIP	0			R332	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R160	1-216-864-11	SHORT CHIP	0			R333	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R161	1-216-864-11	SHORT CHIP	0			R334	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R162	1-216-864-11	SHORT CHIP	0			R335	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R163	1-216-864-11	SHORT CHIP	0			R336	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R164	1-216-864-11	SHORT CHIP	0			R375	1-216-864-11	SHORT CHIP	0		
R165	1-216-864-11	SHORT CHIP	0			R382	1-216-864-11	SHORT CHIP	0		
R171	1-216-864-11	SHORT CHIP	0			R401	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R172	1-216-864-11	SHORT CHIP	0			R402	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R173	1-216-864-11	SHORT CHIP	0			R403	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R174	1-216-864-11	SHORT CHIP	0			R404	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R175	1-216-864-11	SHORT CHIP	0			R405	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R189	1-218-827-11	METAL CHIP	150	0.5%	1/10W	R406	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R190	1-218-827-11	METAL CHIP	150	0.5%	1/10W	R407	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R191	1-216-821-11	METAL CHIP	1K	5%	1/10W	R408	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R192	1-218-827-11	METAL CHIP	150	0.5%	1/10W	R409	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R193	1-216-821-11	METAL CHIP	1K	5%	1/10W	R410	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R195	1-218-827-11	METAL CHIP	150	0.5%	1/10W	R411	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R197	1-218-827-11	METAL CHIP	150	0.5%	1/10W	R412	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R204	1-216-822-11	METAL CHIP	1.2K	5%	1/10W	R413	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R205	1-216-833-11	METAL CHIP	10K	5%	1/10W	R416	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
R206	1-216-833-11	METAL CHIP	10K	5%	1/10W	R417	1-216-833-11	METAL CHIP	10K	5%	1/10W
R207	1-216-826-11	METAL CHIP	2.7K	5%	1/10W	R418	1-216-845-11	METAL CHIP	100K	5%	1/10W
R208	1-216-839-11	METAL CHIP	33K	5%	1/10W	R419	1-216-849-11	METAL CHIP	220K	5%	1/10W
R209	1-216-839-11	METAL CHIP	33K	5%	1/10W	R420	1-216-817-11	METAL CHIP	470	5%	1/10W
R210	1-216-841-11	METAL CHIP	47K	5%	1/10W	R421	1-216-833-11	METAL CHIP	10K	5%	1/10W
R212	1-216-833-11	METAL CHIP	10K	5%	1/10W	R422	1-216-833-11	METAL CHIP	10K	5%	1/10W
R213	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W	R424	1-216-833-11	METAL CHIP	10K	5%	1/10W
R214	1-216-835-11	METAL CHIP	15K	5%	1/10W	R425	1-216-841-11	METAL CHIP	47K	5%	1/10W
R215	1-216-834-11	METAL CHIP	12K	5%	1/10W	R426	1-216-817-11	METAL CHIP	470	5%	1/10W
R216	1-216-834-11	METAL CHIP	12K	5%	1/10W	R427	1-216-817-11	METAL CHIP	470	5%	1/10W
R219	1-216-838-11	METAL CHIP	27K	5%	1/10W	R428	1-216-833-11	METAL CHIP	10K	5%	1/10W
R220	1-216-833-11	METAL CHIP	10K	5%	1/10W	R429	1-216-841-11	METAL CHIP	47K	5%	1/10W
R221	1-218-889-11	METAL CHIP	56K	0.5%	1/10W	R430	1-216-841-11	METAL CHIP	47K	5%	1/10W
R223	1-218-895-11	METAL CHIP	100K	0.5%	1/10W	R434	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R224	1-216-833-11	METAL CHIP	10K	5%	1/10W	R435	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R225	1-218-895-11	METAL CHIP	100K	0.5%	1/10W	R438	1-216-845-11	METAL CHIP	100K	5%	1/10W
R226	1-218-889-11	METAL CHIP	56K	0.5%	1/10W	R440	1-216-817-11	METAL CHIP	470	5%	1/10W
R229	1-216-839-11	METAL CHIP	33K	5%	1/10W	R441	1-216-817-11	METAL CHIP	470	5%	1/10W
R230	1-218-893-11	METAL CHIP	82K	0.5%	1/10W	R442	1-216-864-11	SHORT CHIP	0		
R231	1-218-875-11	METAL CHIP	15K	0.5%	1/10W	R443	1-216-864-11	SHORT CHIP	0		
R232	1-218-877-11	METAL CHIP	18K	0.5%	1/10W	R444	1-216-809-11	METAL CHIP	100	5%	1/10W
R233	1-218-883-11	METAL CHIP	33K	0.5%	1/10W	R449	1-216-813-11	METAL CHIP	220	5%	1/10W
R234	1-216-833-11	METAL CHIP	10K	5%	1/10W	R451	1-216-807-11	METAL CHIP	68	5%	1/10W
R235	1-216-864-11	SHORT CHIP	0			R452	1-216-833-11	METAL CHIP	10K	5%	1/10W
R240	1-216-864-11	SHORT CHIP	0			R453	1-216-821-11	METAL CHIP	1K	5%	1/10W
R241	1-216-864-11	SHORT CHIP	0			R454	1-216-821-11	METAL CHIP	1K	5%	1/10W
R244	1-216-864-11	SHORT CHIP	0			R456	1-216-821-11	METAL CHIP	1K	5%	1/10W
R245	1-216-864-11	SHORT CHIP	0			R468	1-216-864-11	SHORT CHIP	0		
R246	1-216-829-11	METAL CHIP	4.7K	5%	1/10W	R475	1-216-295-91	SHORT CHIP	0		
R247	1-216-821-11	METAL CHIP	1K	5%	1/10W	R484	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
R248	1-216-864-11	SHORT CHIP	0			R489	1-216-833-11	METAL CHIP	10K	5%	1/10W
R249	1-216-864-11	SHORT CHIP	0			R503	1-216-833-11	METAL CHIP	10K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R504	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R505	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R507	1-216-864-11	SHORT CHIP	0		
R515	1-216-864-11	SHORT CHIP	0		
R1101	1-218-855-11	METAL CHIP	2.2K	0.5%	1/10W
R1102	1-218-827-11	METAL CHIP	150	0.5%	1/10W
R1110	1-216-826-11	METAL CHIP	2.7K	5%	1/10W
R1114	1-216-801-11	METAL CHIP	22	5%	1/10W
R1115	1-216-805-11	METAL CHIP	47	5%	1/10W
R1123	1-216-864-11	SHORT CHIP	0		
R1124	1-216-864-11	SHORT CHIP	0		
R1125	1-216-864-11	SHORT CHIP	0		
R1129	1-216-845-11	METAL CHIP	100K	5%	1/10W
R1133	1-216-864-11	SHORT CHIP	0		
R1134	1-216-864-11	SHORT CHIP	0		
R1138	1-216-864-11	SHORT CHIP	0		
R1139	1-216-864-11	SHORT CHIP	0		
R1140	1-216-864-11	SHORT CHIP	0		
R1141	1-216-864-11	SHORT CHIP	0		
R1142	1-216-864-11	SHORT CHIP	0		
R1143	1-216-864-11	SHORT CHIP	0		
R1146	1-216-295-91	SHORT CHIP	0		
R1147	1-216-295-91	SHORT CHIP	0		
R1150	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R1151	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R1152	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R1160	1-216-864-11	SHORT CHIP	0		
R1168	1-216-815-11	METAL CHIP	330	5%	1/10W
R1169	1-216-864-11	SHORT CHIP	0		
R1177	1-216-864-11	SHORT CHIP	0		
R1178	1-216-821-11	METAL CHIP	1K	5%	1/10W
R1180	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1181	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1182	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1183	1-216-833-11	METAL CHIP	10K	5%	1/10W
		<NETWORK>			
RB103	1-234-371-21	RES, NETWORK	47	(1005X4)	
RB104	1-234-371-21	RES, NETWORK	47	(1005X4)	
RB105	1-234-371-21	RES, NETWORK	47	(1005X4)	
RB106	1-234-371-21	RES, NETWORK	47	(1005X4)	
RB107	1-234-371-21	RES, NETWORK	47	(1005X4)	
RB108	1-234-371-21	RES, NETWORK	47	(1005X4)	
RB109	1-234-371-21	RES, NETWORK	47	(1005X4)	
RB110	1-234-371-21	RES, NETWORK	47	(1005X4)	
RB111	1-234-371-21	RES, NETWORK	47	(1005X4)	
RB112	1-234-371-21	RES, NETWORK	47	(1005X4)	
RB113	1-234-371-21	RES, NETWORK	47	(1005X4)	
RB114	1-234-371-21	RES, NETWORK	47	(1005X4)	
RB115	1-234-371-21	RES, NETWORK	47	(1005X4)	
		<CYRSTAL>			
X102	1-813-539-11	QUARTZ CRYSTAL UNIT			

Ref. No.	Part No.	Description			Remark
		SW-443 BOARD			
		*************			
		<CAPACITOR>			
C501	1-163-021-91	CERAMIC CHIP	0.01UF	10.00%	50V
C502	1-124-589-11	ELECT	47UF	20.00%	16V
		<CONNECTOR>			
CN502	1-750-195-11	CONNECTOR, BOARD TO BOARD 6P			
		<DIODE>			
D501	6-501-147-01	DIODE LTL-1MHAE-112A			
		<IC>			
IC501	6-600-256-01	IC GP1UE27SXK0F			
		<CHIP CONDUCTOR>			
JR501	1-216-295-00	SHORT CHIP	0		
JR502	1-216-295-00	SHORT CHIP	0		
JR503	1-216-295-00	SHORT CHIP	0		
JR504	1-216-295-00	SHORT CHIP	0		
JR505	1-216-295-00	SHORT CHIP	0		
JR506	1-216-295-00	SHORT CHIP	0		
JR507	1-216-295-00	SHORT CHIP	0		
JR508	1-216-295-00	SHORT CHIP	0		
		<RESISTOR>			
R502	1-216-017-91	RES-CHIP	47	5%	1/10W
R504	1-216-059-00	RES-CHIP	2.7K	5%	1/10W
R505	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R506	1-216-071-00	RES-CHIP	8.2K	5%	1/10W
R507	1-216-081-00	RES-CHIP	22K	5%	1/10W
R508	1-216-059-00	RES-CHIP	2.7K	5%	1/10W
R509	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R510	1-216-071-00	RES-CHIP	8.2K	5%	1/10W
R511	1-216-081-00	RES-CHIP	22K	5%	1/10W
R512	1-216-059-00	RES-CHIP	2.7K	5%	1/10W
R513	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R514	1-216-071-00	RES-CHIP	8.2K	5%	1/10W
		<SWITCH>			
S501	1-771-410-21	SWITCH, TACT			
S502	1-771-410-21	SWITCH, TACT			
S503	1-771-410-21	SWITCH, TACT			
S504	1-771-410-21	SWITCH, TACT			
S505	1-771-410-21	SWITCH, TACT			
S506	1-771-410-21	SWITCH, TACT			
S507	1-771-410-21	SWITCH, TACT			
S508	1-771-410-21	SWITCH, TACT			
S509	1-771-410-21	SWITCH, TACT			
S510	1-771-410-21	SWITCH, TACT			

DVP-NC60P

SW-443 | POWER BLOCK (SRV1487UC)

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
S511	1-771-410-21	SWITCH, TACT					
S512	1-771-410-21	SWITCH, TACT					
S513	1-771-410-21	SWITCH, TACT					
S514	1-771-410-21	SWITCH, TACT					
⚠	1-478-538-12	POWER BLOCK (SRV1487UC)					
		* * * * * * * * * * * * * * * * *					

<ACCESSORIES>

Ref. No.	Part No.	Description	Remark
	1-751-271-71	CORD, CONNECTION (AV)	
	2-585-637-11	MANUAL, INSTRUCTION (ENGLISH)	
	2-585-637-21	MANUAL, INSTRUCTION (FRENCH) (CND)	
	1-479-179-41	REMOTE COMMANDER (RMT-D176A)	

Note :
The components identified by
mark ⚠ or dotted line with mark
⚠ are critical for safety.
Replace only with part number
specified.